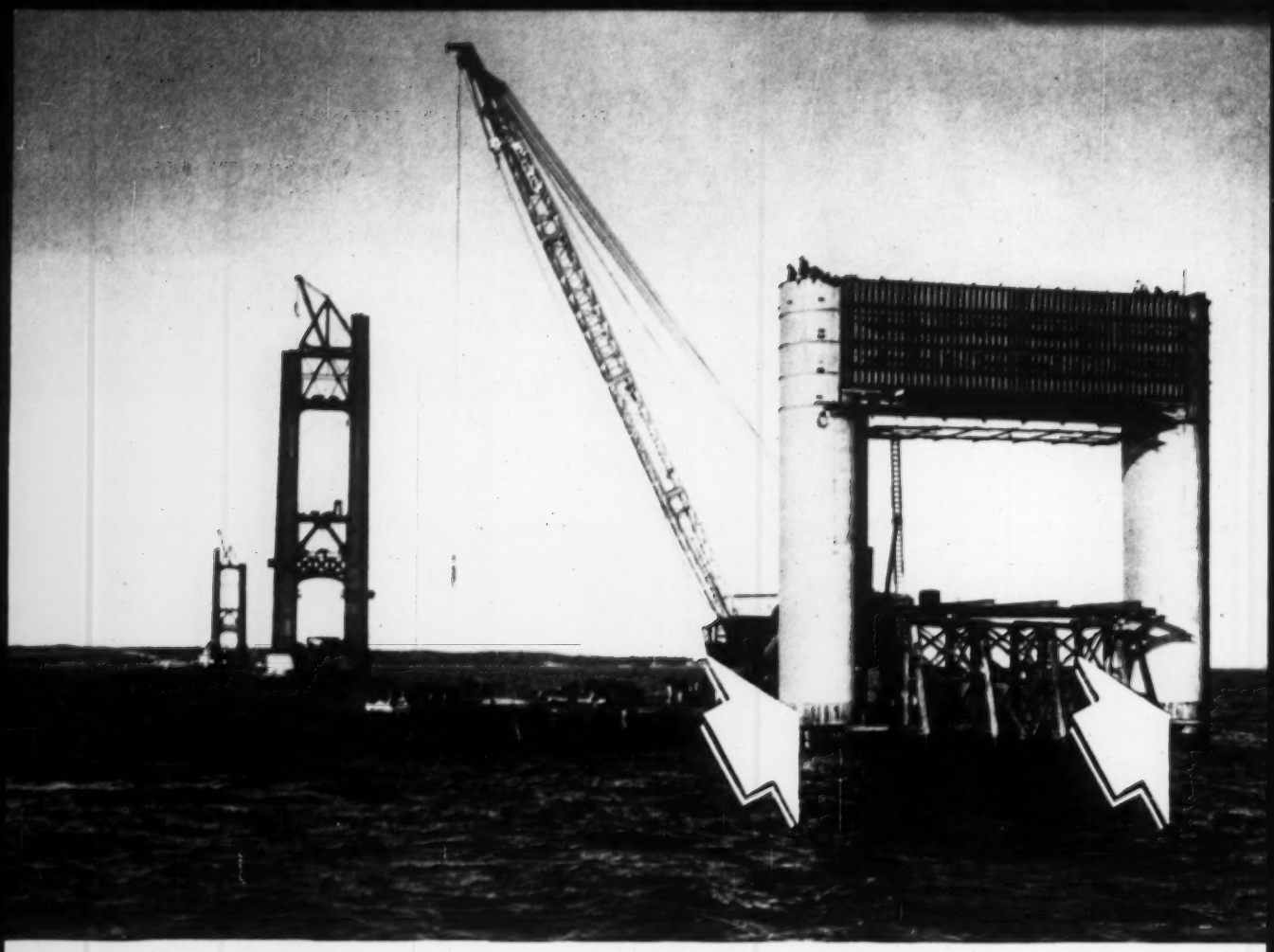
ENGINEERING NEWS-RECORD

Their worry? Getting aid to sewage works rolling p. 23

ANN ARBOR MICH

A McGRAW-HILL PUBLICATION



World's longest suspension bridge stretches four miles across the Straits of Mackinac joining Michigan's upper peninsula with the rest of the state.

Wrought Iron Plates protect Mackinac Bridge pilings against double-trouble

Welded wrought iron plates extending ten feet above and eight feet below the waterline, form a bulwark of protection against corrosion and ice.

Engineers on the $100 million Mackinac Bridge faced this problem: what material could most economically protect the bridge's concrete substructure against recurrent wet-dry corrosion and abrasion by ice?

Consulting Engineer D. B. Steinman, New York, met these requirements by specifying over 270 tons of ⅜-inch wrought iron plates. These plates do double-duty . . . combatting corrosion and guarding pilings against stress and subsequent spalling under dense ice formations.

Wrought iron can cut maintenance costs in your installation, too. Our booklet, "Wrought Iron for Bridge Construction," tells you how and why. Write for a copy.

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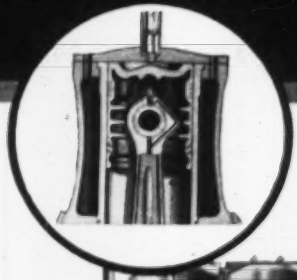
"TRUE DIESEL" OPERATION

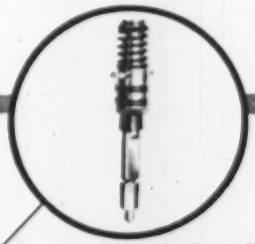
Look inside a Murphy Diesel for the reasons why Murphy engines are noted for economy, dependability and long life. You'll find design features ordinarily found only in large diesel engines . . . the "true diesel" features offered by no other engine in Murphy's size and power range.

Look for these features in your next diesel engine. Ask your Murphy Diesel Dealer to explain the advantages of "true diesel" operation for your power requirements.



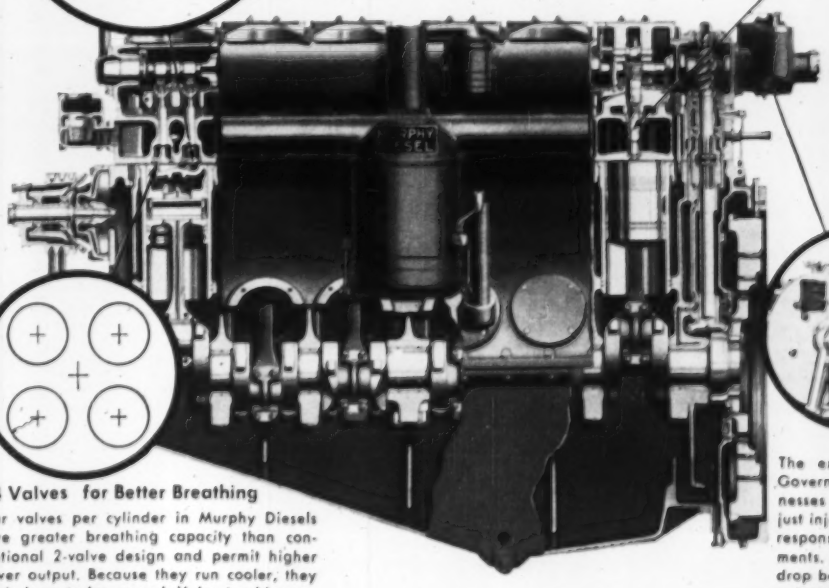
Plain, Open Combustion Chamber

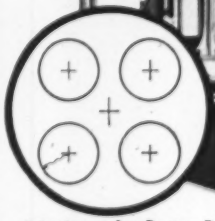
The Murphy Diesel's plain, open combustion chamber, like that of time-tested larger engines, assures complete combustion. Murphy owners get maximum power from each drop of fuel with less engine wear.



Precisely Controlled Fuel Injection

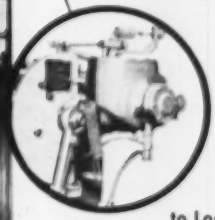
In the Murphy Diesel, fuel injection for each cylinder is accurately controlled by a simple injector unit which serves as both pump and nozzle. High pressure fuel lines are eliminated. There is no erratic, irregular injection, no after-dribbling or air binding.





4 Valves for Better Breathing

Four valves per cylinder in Murphy Diesels have greater breathing capacity than conventional 2-valve design and permit higher power output. Because they run cooler, they rarely have to be ground. Valve troubles are virtually unknown.



Instant Response to Load Change

The exclusive Hydraulic Servo-Type Governor on a Murphy Diesel harnesses lubricating oil pressure to adjust injector controls for instantaneous response to changing power requirements. If lube oil pressure should drop below a safe level, the governor automatically shuts off the engine.

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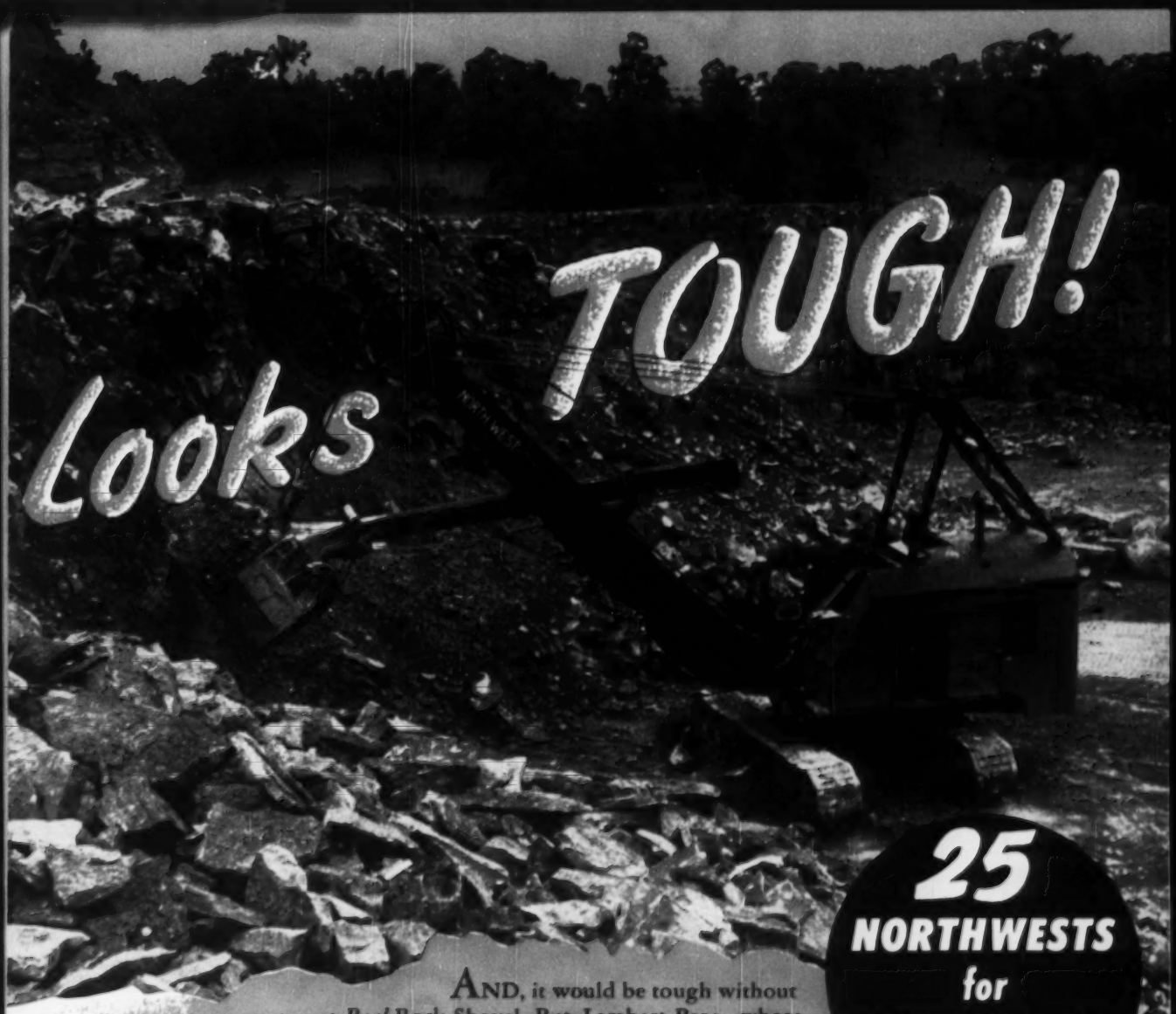

25 NORTHWESTS for LAMBERT BROS., INC. Knoxville Tenn.

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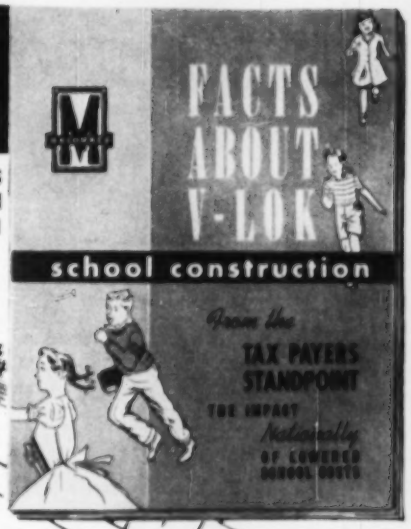

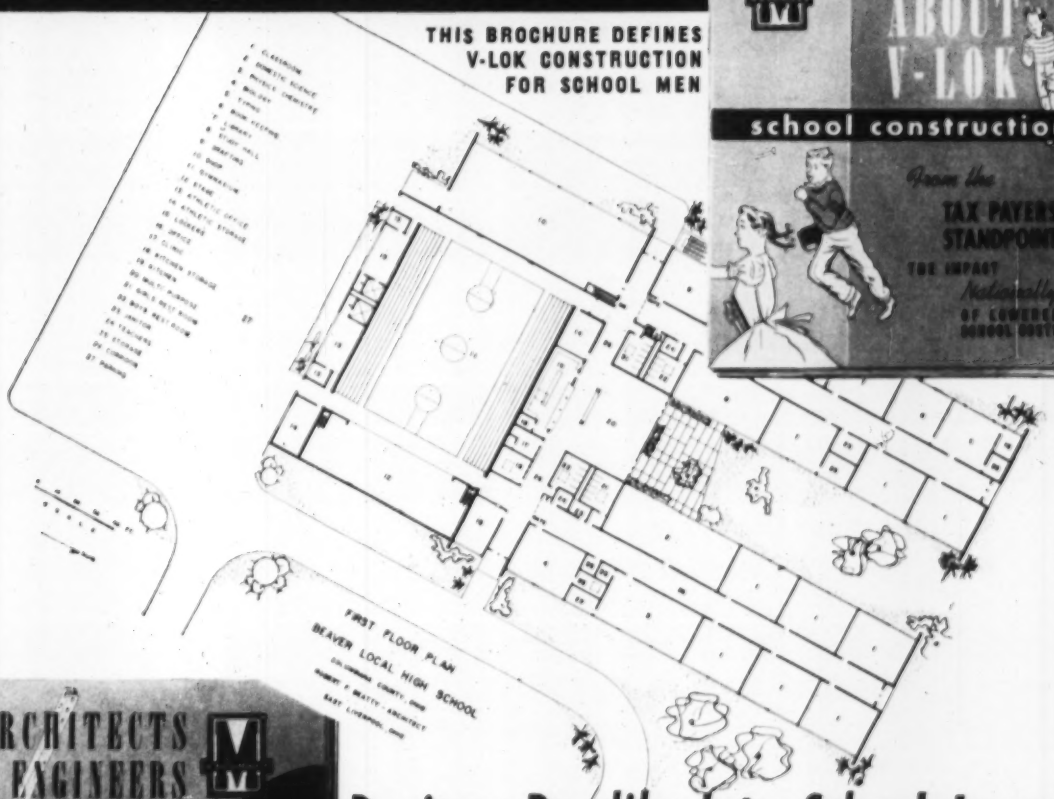

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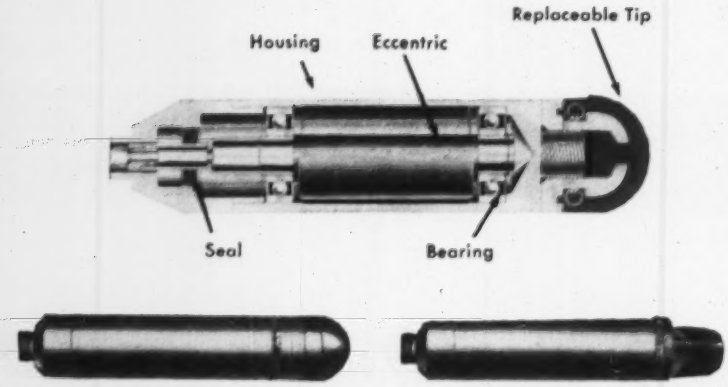

SIMPLE DESIGN — Short head Viber vibrators are simple in design and have few parts as indicated in cut-away picture above. Head assembly with replaceable rubber tip is shown at left. Assembly with 3-finned steel-cast tip at right.

Short Head Viber Vibrators Offer Major Advantages in Placement of Concrete

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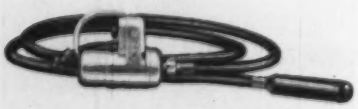
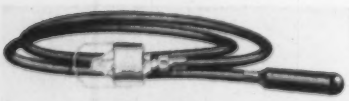
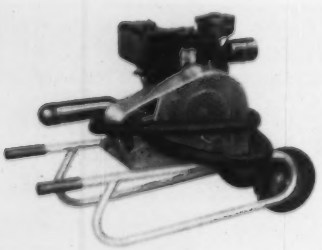


Model E Electric



Model P Pneumatic



Model G Gasoline

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Reader Comment

Columbia River Potential

SIR—In the very interesting article "Impasse Over Columbia River Power" (ENR Aug. 23, p. 21), there appears to be some confusion between kw and kwh. I refer to the statement in the first column on page 22 which states, "The basin's maximum power potential is about 32 billion kwh . . ." I think you meant 32 million kw; the correct figure as indicated subsequently in the article. Measured in kwh, the potential energy would be about 217 billion kwh.

DANIEL J. FEE
San Francisco Regional Office
Federal Power Commission

Correction

SIR—I would like to call attention to a slight typographical error in the highway trailer "truck mounted borer" story carried on p. 74 of ENR, Sept. 20 issue.

You will note that the fourth line of the second paragraph refers to a "120 deg" operational radius, whereas it should be "180."

EDWARD BRAUSE
Merritt-Chapman & Scott Corp.
New York City

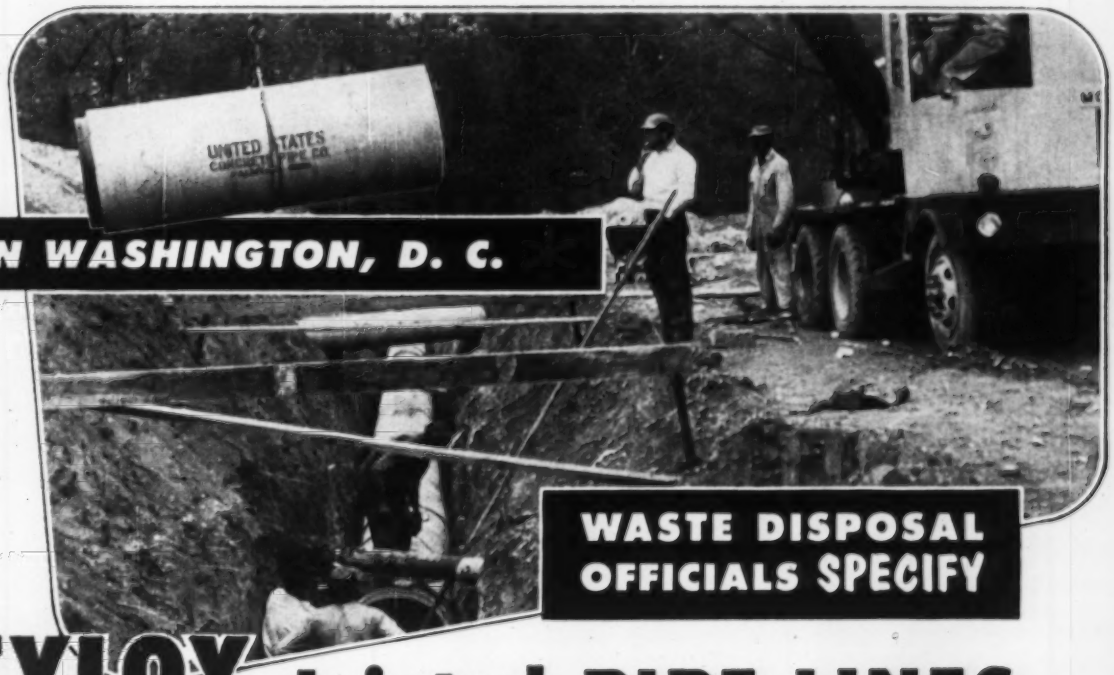
Port Change Clarified

SIR—In your Sept. 13 issue, p. 64, the article "Ecuador Port Plans Change on Advice from U. S. Engineers" states that the Government of Ecuador has abandoned plans for the development of the port of Guayaquil and has decided to construct a new port on a nearby estuary as a result of a study made by a team of U. S. Army Engineers.

Actually, the Ecuadorian government had decided to construct the port at the new location prior to the team's study, but the International Bank requested a review of the tidal hydraulic features of the project to insure that the correct decision had been made and that there were no unforeseen problems

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



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NO CORROSION—Made of specially compounded rubber, TYLOX Joints are immune to sewerage or industrial waste acids and alkalies. TYLOX outlasts the pipe itself.

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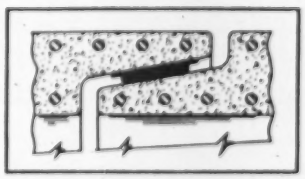
ENGINEERS: Sanitary Engineering Dept., Government of the District of Columbia.

CONTRACTOR: J. L. McIlvane Co., Washington, D. C.

PIPE: Vitrified Plate-Lined Concrete Pipe, manufactured by United States Concrete Pipe Company, Cleveland, Ohio.



This rubber-tight mechanical seal stays tight "for the life of the line."

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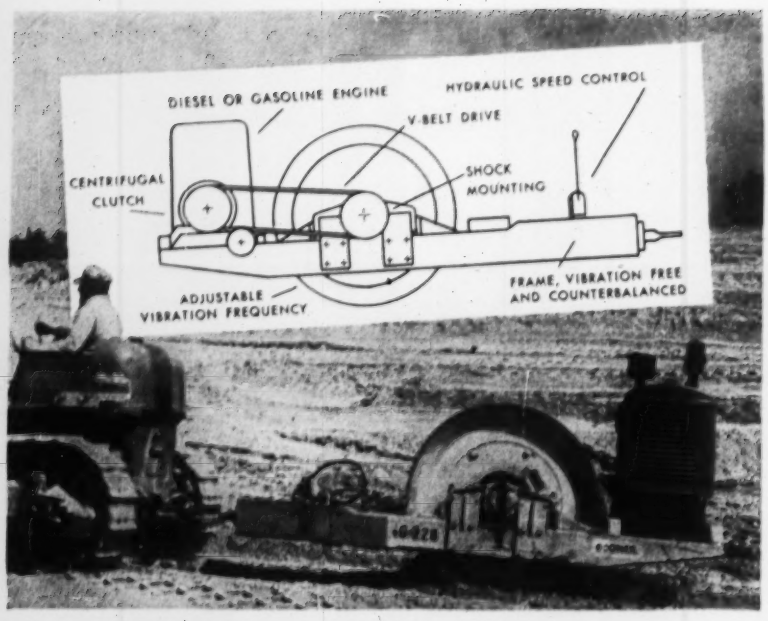

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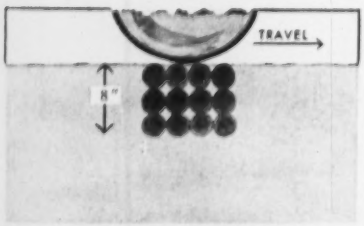
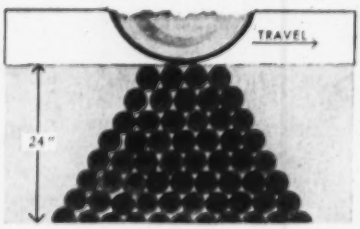
VIBRATORY ROLLER

"Terrapac" compacts faster, better and deeper in fewer passes than ordinary 30-50 ton rollers yet weighs only 3½ tons. Saves hours of valuable time because maximum density can usually be achieved in only 2 passes . . . Light enough to be easily handled on any fill or for quick transport . . . Also useful as a static roller if desired.



CONVENTIONAL STATIC COMPACTION

Rollers relying on weight alone produce friction forces between individual soil particles that prevent densification at any great depth.



TERRAPAC DYNAMIC COMPACTION

Vibratory forces, transmitted to soil in all directions, reduces friction — facilitates relocation of particles at far greater depths.

An actual field test under State Highway supervision showed that a specified 100% standard proctor density could be obtained at a 24" depth after 2 passes with a "Terrapac" . . . A 15 ton smooth roller required 20 passes to obtain specified density at only an 8" depth!

VIBRO + PLUS

PRODUCTS, INCORPORATED

STANHOPE, NEW JERSEY No. 41-6

. . . Reader Comment

which would prove excessively difficult and costly in the new port and deep-draft waterway.

J. H. Dousma
Hydraulic Engineer
Office, Chief of Engineers
Washington 25, D. C.

CALENDAR

University of Illinois and Portland Cement Assoc., seven lectures on thin-shell concrete structures, Navy Pier, Chicago, Ill., 7 pm to 9 pm, Oct. 9, 16, 23.

Federation of Sewage and Industrial Wastes Associations, annual convention, Hotel Statler, Los Angeles, Calif., Oct. 8-11.

Noise Abatement Symposium, seventh annual meeting, Hotel Sherman, Chicago, Ill., Oct. 11-12.

Sixth Annual Drilling Symposium, The University of Minnesota, Minn., October 11, 12, 13, 1956.

Rail Steel Bar Association, fall meeting, Sheraton-Mount Royal Hotel, Montreal, Canada, Oct. 15-16.

American Society of Civil Engineers, annual convention, Wm. Penn Hotel, Pittsburgh, Pa., Oct. 15-19.

The Construction Section, National Safety Council, Conrad Hilton Hotel, Chicago, October 22 and 23.

National Safety Council, 44th National Safety Congress and Exposition, Oct. 22-26, Chicago, Ill., Hotels Conrad Hilton, Congress, LaSalle and Morrison, Oct. 22-23.

American Concrete Institute, 9th annual regional meeting, Sheraton-Mount Royal Hotel, Montreal, Canada, Oct. 24-25.

National Society of Professional Engineers, fall meeting, The Greenbrier, White Sulphur Springs, W. Va., Oct. 25-26.

Society for Experimental Stress Analysis, Deshler-Hilton Hotel, Columbus, Ohio, Oct. 31-Nov. 2.

West Coast Noise Symposium, third annual meeting, noise in buildings, Institute of Aeronautical Sciences Auditorium, Los Angeles, Calif., Nov. 12-13.

American Public Health Association, annual convention, Convention Hall, Atlantic City, N. J., Nov. 12-16.

Associated Equipment Distributors, 38th annual meeting, Conrad Hilton Hotel, Chicago, Jan. 27-30.

American Road Builders Association, annual meeting and road show, Chicago Amphitheater, Jan. 28-Feb. 2.

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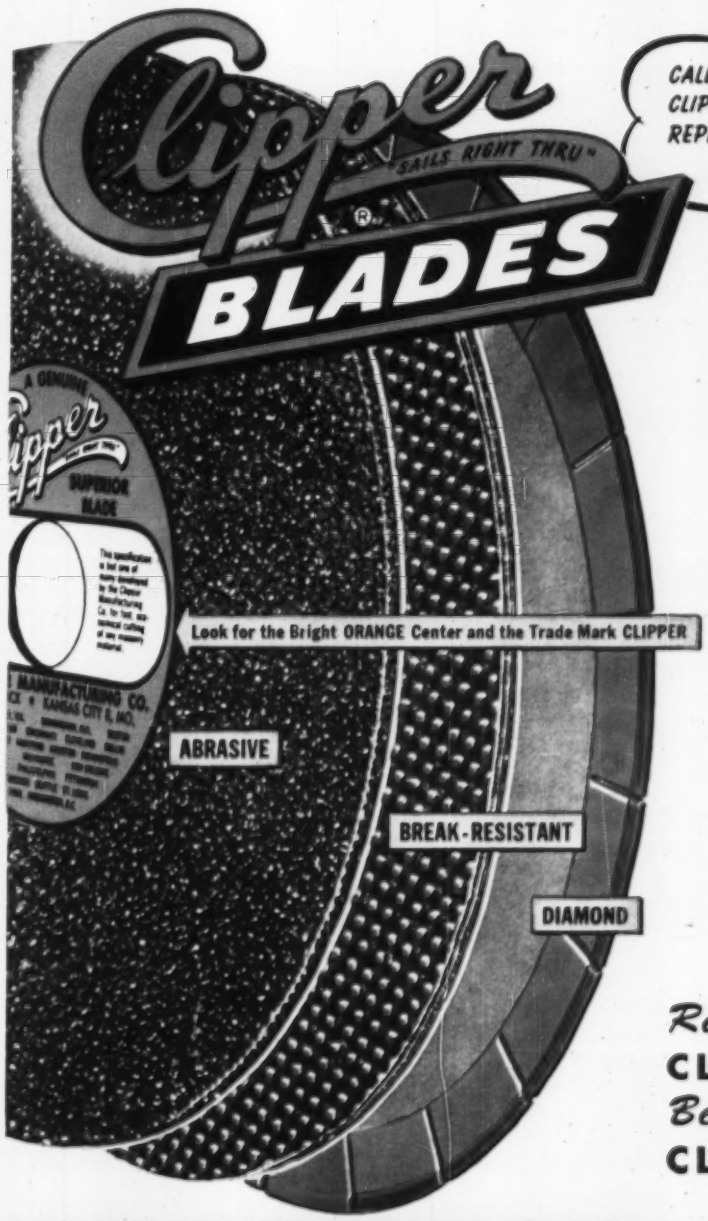

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. . . and here are 10 ways it helps CONTRACTORS and BUILDERS save money

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Good communication is vital in keeping projects running smoothly and in meeting construction deadlines. And that's just what Bendix*Dyna-Com Radio gives you. Good, clear, dependable communications. Radio contact frees superintendents and field foremen from extra miles of driving making routine checks. It allows them to spend more time at critical points where they are needed most. Bendix Dyna-Com Radio provides the instant voice contact between all key personnel that results in smoother, on-schedule operation. It prevents duplication of work effort, eliminates lost time for both men and equipment.

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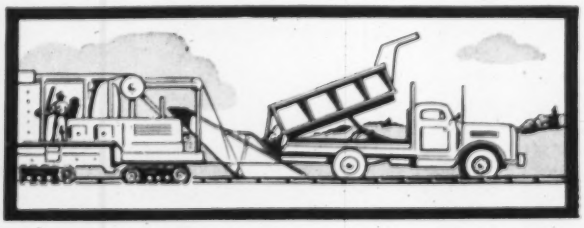

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Dyna-Com Mobiles Cover all frequency ranges: 25-54 mc; 144-174 mc; 450-470 mc. Available in power outputs from 15 to 60 watts. Interchangeable between 6 and 12 volt vehicles without modification.

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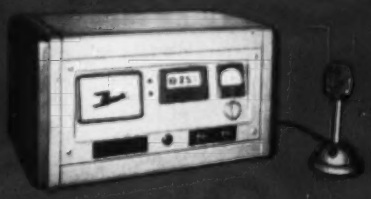
Dyna-Com Portables Greater versatility and flexibility than any other portable equipment. Compact, lightweight, full 1-watt output. Extra-long battery life. Complete line of accessories including a transistorized, plug-in loud-speaker.

NEW!



Dyna-Com Consoles and Base Stations For 25-54 mc; 144-174 mc; 450-470 mc; delivering from 20 to 60 watts output. Operate from 117 volt AC power lines. Quality engineered for performance and appearance.

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Bendix Bantam For low-power, limited range application as a mobile unit or base station. Provides more than 1-watt power output. Operates from 6, 12, 24, 32 volts DC or 117 volts AC without modification or costly converters. Adds flexibility to any communications system.

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*Reg. U. S. Pat. Off.

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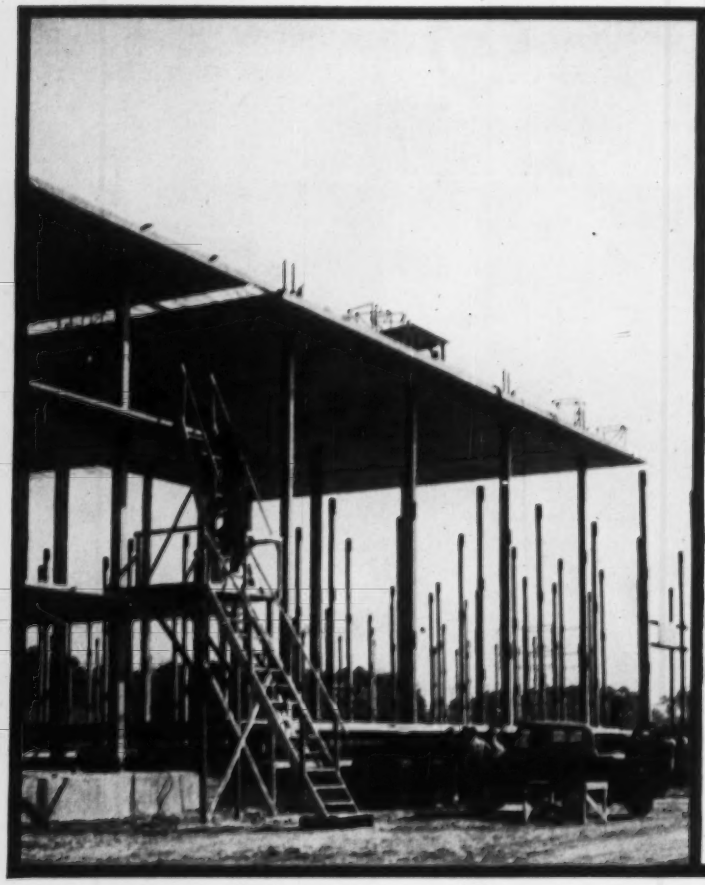

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AN INDEMNITY BOND covered the contractor on this lift slab dormitory built for U. S. Navy at Little Creek, Va.

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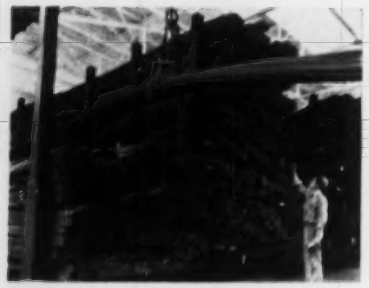
CONTRACTORS GUIDE to Ryerson Steels and Services

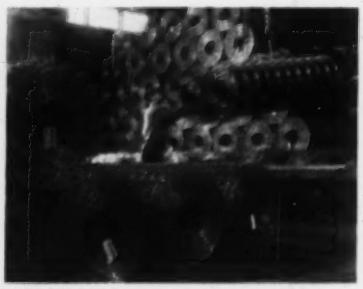
Supply problems are delaying many construction projects today, but you can keep jobs moving ahead unhampered by steel shortages when you build with reinforced concrete—and depend on Ryerson reinforcing service.

So for your buying convenience here's a quick review of Ryerson steel products—all in good supply—and Ryerson services for contractors—all readily available to you.

See your Ryerson Steels catalog for the complete list of products—including all construction steel accessories, threaded bars, turnbuckles, caisson rings, etc., and write for our bulletin (No. 70-2) on specialized reinforcing service.

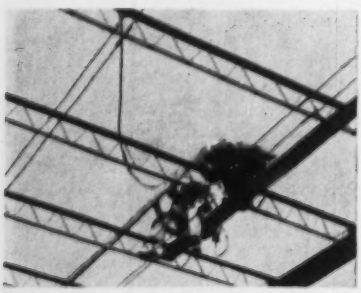


RE-BARS—New-billet, deformed reinforcing bars in stock at 15 Ryerson plants. Designed for highest bonding power, bars conform to all building codes and to ASTM specs. A-15-52T and A-305-50T.



WIRE FABRIC—Electric-welded fabric of cold drawn wire in rolls available from stock in a wide range of standard gauges and spacings. Special gauges and spacings furnished to order.

SPIRALS, for column reinforcement—Made from hot rolled wire rod or cold drawn wire in ¼", ⅜", ½" and ⅝" diameters complete with channel spacers. Collapsible for shipment.



OPEN WEB STEEL JOISTS—All welded, designed for maximum strength, minimum weight in accord with Dept. of Commerce standards. Available in 4' to 40' lengths and 8" to 20" depths.

DETAILING—Expert Ryerson detailers can furnish complete setting diagrams and bending details that effect substantial reduction in re-bar placement costs.

FABRICATING SERVICE—Modern equipment and competent personnel to cut, bend, weld, thread or otherwise prepare any tonnage of construction steels are ready to work for you at Ryerson.

POSITIVE IDENTIFICATION—Permanent tags that cannot be defaced or torn off accurately identify every piece of Ryerson reinforcing steel—so correct placement on the job is quick and sure.

STEEL FORMS for concrete joist construction—Standard removable steel forms, slip or nail-down type, furnished in 20" or 30" widths. Special filler forms in widths of 10, 15, 20 and 30 inches.

DEPENDABLE DELIVERIES—Huge Ryerson stocks and big fabricating capacity enable us to meet most any delivery requirement. Your schedule sets the pace—Ryerson steel rolls to meet it.

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ENGINEERING NEWS-RECORD

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

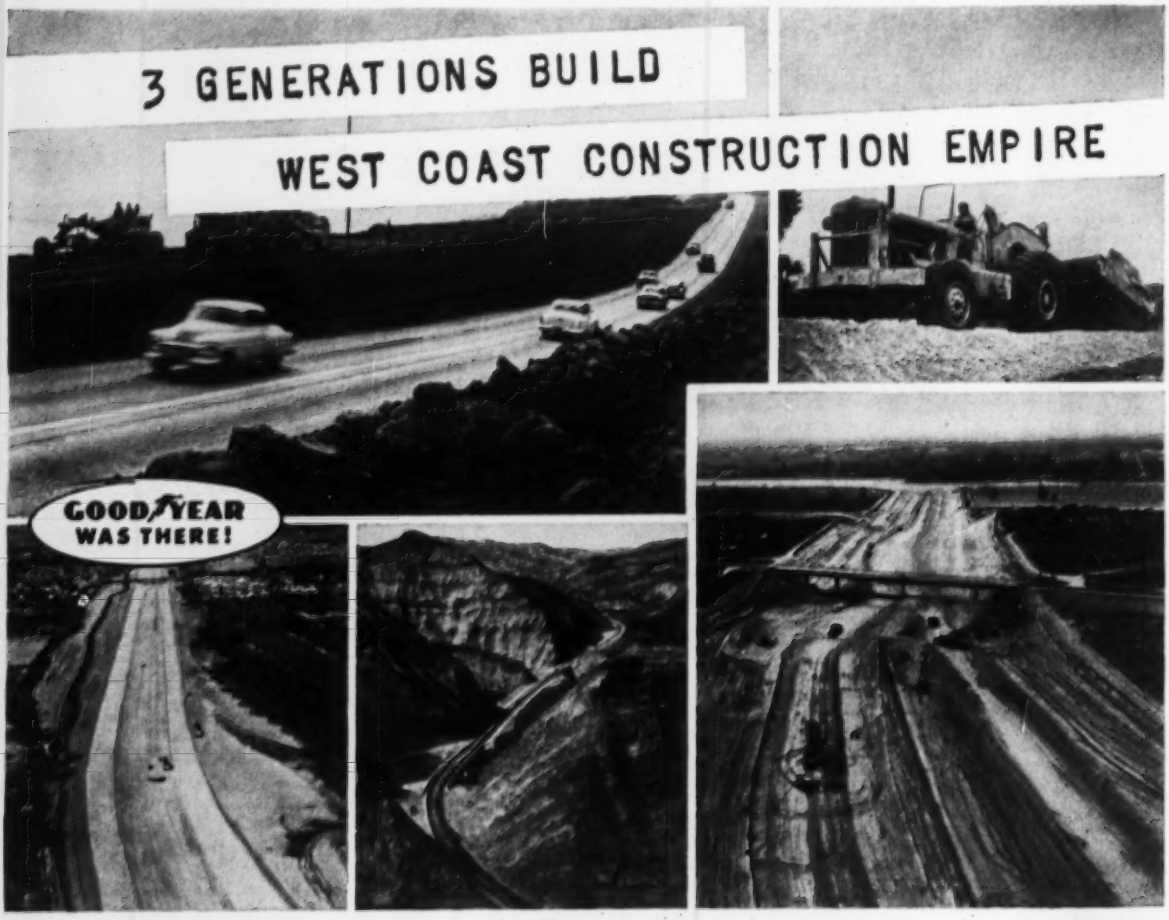
BY-PASS AROUND MOSCOW—The Soviet Union has embarked on a major highway construction program that will speed east-west travel in its European area—and permit rapid evacuation of Moscow. A key part of the plan calls for encircling Moscow with a 50-mi-long belt parkway to divert transit traffic from the city and provide internal communication between numerous spoke-like thoroughfares radiating from the center of the capital. The parkway featuring two 20-ft-wide roadways, will girdle the city at an average distance of eight miles from the Kremlin.

INSPECTION STANDARDS SET UP—The Concrete Industry Board of New York City appears ready to take its first definite step to upgrade concrete. At its next meeting, it will act on a proposed Manual of Recommended Practice for Inspection and Testing of Concrete Materials and Concrete. Included are recommendations that qualified testing laboratories be employed by the owner or architect-engineer and not by the contractor and that competitive bidding should not be the basis for selecting a testing laboratory. No procedure has been announced yet for enforcing the recommended practice.

PERFORMANCE-STANDARDS CODE—An unusually liberal building code will go into effect in Seattle, Wash., Oct. 10. For example, instead of spelling out requirements for steel design, the code prescribes that steel be used in a manner conforming to "accepted American engineering practices and subject to rational analysis." Requirements for plastering are confined to fireproofing applications, no limitations being placed on plaster for decorative purposes. Replacing a 14-year-old code, the new regulations were prepared by Talbot Wegg, who now has returned to private practice as an architect.

TOO MUCH, TOO SOON?—With their worries over getting a national highway program through Congress now well past, the Institute of Traffic Engineers found a new set of problems to worry about. Specifically, this was their concern: Maybe there's more money and more work available than the country is able to absorb. Speakers at an annual meeting in San Francisco listed these facts: Factual data are lacking to back the 41,000-mi program; some states haven't legislative setups to cope with the program; public support has still to be marshalled for specific projects; administrative changes are needed in the states to prevent loss of time in the program; there aren't enough engineers available.

3 GENERATIONS BUILD WEST COAST CONSTRUCTION EMPIRE



Starting 76 years ago, as a small contractor, Adolph Teichert built the versatile organization that has what it takes to lick the big ones pictured above. Today, when you see a giant West Coast job—quarrying, earth-moving, road, rail bed, military base or dam building—it's a fair bet that A. Teichert & Son, Inc., have a hand in it! Earthmover shown above has Goodyear Hard Rock Rib tires on front wheels, Hard Rock Lug on rear.

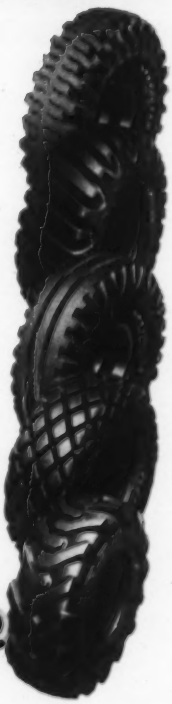
Now Goodyear "is there" with 3-T Nylon Cord Tires... TUBELESS or TUBE-TYPE

For well over 2 years, Goodyear Triple-Tempered 3-T NYLON CORD tires have been breaking records for stamina and endurance on the toughest jobs in our land.

And now your savings can be even greater—your tube and flap troubles ended forever—with Goodyear *tubeless* tires for every type vehicle *regardless of size!*

Leading equipment manufacturers have adopted Goodyear tubeless tires as standard—or will supply them as specified. Or you can convert your present equipment to Goodyear tubeless. Get the facts from your Goodyear dealer.

Goodyear, Truck Tire Dept., Akron 16, Ohio



FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE BUILT WITH 3-T NYLON CORD

Buy and Specify

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MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Road Lug, All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR TIRES

Look for this sign; there's a Goodyear Dealer near you.

WASHINGTON OBSERVER

The new credit relief for lower cost housing will be followed with more government aid if the hoped-for remedies fail to shore up the industry. Administration officials hope the lower down payment provisions and easier borrowing from the Federal National Mortgage Assn., and home loan banks will help, at least in smaller towns and less populated regions. Housing industry spokesmen are still pessimistic.

But Administration economists see the problem of availability of credit to segments of the economy—housing, small business, farming—as a long-term one. They figure: A tight money rein on industry generally is probably going to be a way of life for some time to come because of the prospects of continuing demands for money and materials from capital expansion programs of industry.

So special easing devices are going to be needed for particular cases. One now being pushed by the Administration: resort to a little used function of the district Federal Reserve Banks permitting loans to businessmen who can't obtain them elsewhere. Another publicized by last week's meeting at the White House of small businessmen: The Small Business Administration has up to $50 million to lend, the lure to attract a contractor or businessman to come and get it.

The Federal Housing Administration is changing its policy in order to convince lenders they can make advance commitments to builders for housing. A builder now will be permitted to absorb more than a 2½% discount to the lender in assuming mortgages on houses he may have to take on if sales are temporarily sluggish.

•

Niagara Mohawk Power Co. wants to rebuild part of its plant that slid into the Niagara River last June. It has filed an application with Federal Power Commission to rebuild one generating unit partially damaged by the slide. The company previously has gotten behind the attempt of the New York State Power Authority to build a new Niagara plant, in exchange for some of the power the proposed publicly-owned plant would generate.

•

The military is moving toward using contractors more and more for operating and maintaining installations and equipment—instead of uniformed personnel.

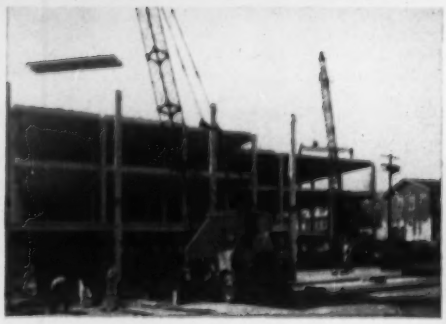
A good example is the so-called DEW Line, the Distant Early Warning radar network being built across the roof of the continent in the Arctic. The Air Force is about to award IT&T's Federal Telephone and Radio Co. a contract to maintain and operate the system.

•

Corps of Engineers is under new management this week as Maj. Gen. Emerson C. Itschner takes over from Lt. Gen. Samuel D. Sturgis, Jr. Itschner is the youngest Chief of Engineers in more than 100 years—he's 53. He's been preparing for the take-over since last August when the White House announced his appointment; he just got back a week or so ago from a round-the-world tour of overseas operations.

Itschner has primary job of following through on long-range problems already being tackled—on personnel, getting and keeping good engineers from West Point, R.O.T.C., and civilian life; keeping the Corps' position as a combat outfit; keeping the Air Force happy without a Corps of Engineers of its own; and keeping its record up on civil works construction. Also, there's the important job of keeping its foot in the White House door in cases where other agencies—Agriculture and Interior, for example—also are called upon for advice. (ENR next week will have a detailed report of these problems and Itschner's plans to handle them.)

PRECAST, PRESTRESSED CONCRETE FOR *Speed and Economy*



66 Precast Bays Go Up in 11 Days

● Winter often slows concrete work, but on this concrete building in Bridgeton, N. J., columns, beams and floor members were factory precast and shipped to the site from 30 miles away. As a result, 66 precast bays went up in 11 days on this new 120 by 220-ft. industrial building in Bridgeton, N. J.

Key to fast erection was the use of all precast components. Precast 38-ft.-long columns support 19-ft. pretensioned beam soffits that, in turn, carry 1½-in.-thick, precast channels, 24 in. wide by 10 in. deep by 19 ft. 4 in. long. These channels form the base for a 2-in. cast-in-place concrete topping that comprises the floor surface.

The prestressed beam soffits form the bottom half of the web of a composite T-beam, completed when the topping was placed. Beam soffits were prestressed to carry both the dead load of the channels plus that of the topping. Prestressing was accomplished by tensioning sixteen ⅜-in. strands.

All components were cast at the Berlin, N. J. plant of the Formigli Corporation and shipped to site by truck. Fast, economical erection again confirms the importance of quality members fabricated to closest tolerances under factory-controlled conditions.

Confirmed again, too, is the advantage of using 'Incor'* 24-Hour Cement for the assembly-line production speed which means maximum output with minimum form investment—with the big quality plus that always goes hand in hand with the use of America's FIRST high early strength portland cement.

*Reg. U. S. Pat. Off.

M. C. SCHRANK COMPANY,
Factory and Warehouse, Bridgeton, N. J.

General Contractor: **MESSICK BROTHERS**, Bridgeton, N. J.

Prestressing Engineer: **KEAST & HOOD**, Philadelphia

Precast, Prestressed Members Produced and Erected by:
FORMIGLI CORPORATION, Berlin, N. J. · Philadelphia, Pa.

LONE STAR CEMENTS COVER
THE ENTIRE CONSTRUCTION FIELD

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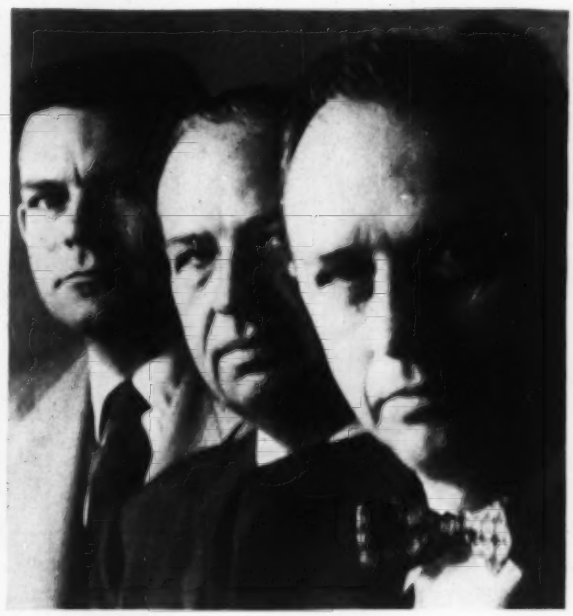
LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 38,000,000 BARRELS ANNUAL CAPACITY



The Team:

Mark D. Hollis, Chief Sanitary Engineering Officer of the U. S. Public Health Service has 8½ years in the job. But until now, he hasn't had construction grants to worry about.

Gordon E. McCallum, with the rank of Sanitary Engineer Director, knows the states' problem from long experience in PHS regional offices.

Arve H. Dahl, McCallum's brand new assistant is 40-year-old newcomer to this level of PHS administration.

The Task:

How to Spend a Half-Billion Dollars

There is reason to believe that eventually it will be administered to good effect, but so far the nation's new Water Pollution Control Law is a deterrent, rather than a stimulant to sewage treatment plant construction.

While the complicated machinery of federal aid is being assembled by federal and state water pollution control agencies, sewage works projects in many places are being held up in hopes of grants from the federal government.

This was certainly to be expected, this period of confusion. For while the law as enacted (ENR July 5, p. 28) put responsibility for construction grants properly in the hands of state sanitary engineers, it prescribed only principles and left a heavy burden of administration to be worked out by the stage agencies and by the U. S. Public Health Service. This is taking time.

During September, as the law reached three months in force, ENR checked with Assistant Surgeon General Mark D. Hollis for a report on overall progress by PHS. Gordon McCallum, chief of the Water Supply and Water Pollution Control Branch within PHS, and his lieutenant, Arve H. Dahl, were consulted on procedures. Then a group of key state sanitary engineers were reached for their intimate knowledge of how the law is affecting and will affect sewage plant construction in their states.

In all quarters there is resignation to this new law of the land. Few if any of those contacted are happy with it. It should be remembered that both the Public Health Service engineers and those engineers of state and interstate agencies whose views were voiced before passage of the law, expressed doubts that its grants-in-aid provision would do good. This was established in the ENR-sponsored conference on the question in St. Louis last spring (ENR June 7, p. 40).

Now, two-thirds of the state sanitary engineers contacted state flatly that the law has become a deterrent to sewage works construction. The other third say that it has not slowed progress yet, but they expect it to do so.

Most of these men believe that the $50-million annual appropriation for grants, for the ten-year aid period prescribed in the law, is just not enough money to do the job of stimulating water pollution control.

• **Determined to make aid work**—But despite these reservations, there is an expressed determination in the states to see that the available money is spent to best advantage. And in Washington, there is a determination to get the aid rolling as soon as possible to end this initial period of halt and hesitation.

Barring some unforeseen hitch, Mark Hollis and company think they are now only weeks away from getting the grant program into operation. McCallum and Dahl have thrashed out many of the problems with officials of every state in a series of meetings through August and September. At the federal level there remain questions of which types of projects are proper candidates for aid—questions such as whether incompleted work started since the July 31 cutoff date established for the law is now eligible for aid. (On one side, giving aid to such projects would not be stimulating new construction; on the other hand, withholding aid from work just started will deter those about to start from going

To get federal aid:

Check to be sure you have . . .

- ☑ **Description of project—new plant, extension, etc.**
- ☑ **Estimate of costs—total and a breakdown**
- ☑ **Size of grant requested**
- ☑ **Evidence that the project is part of the State water pollution control plan**
- ☑ **Idea of whether and how it will conserve water**
- ☑ **Authority to finance, build and operate the project**
- ☑ **Source and supply of funds available for both construction and operation**
- ☑ **Measure of population to be served**
- ☑ **Legal description of site**
- ☑ **Schedule for bids, awards and construction**
- ☑ **Any available engineering reports, plans and specifications**

Then you face a series

You
Submit application
You, or your consulting engineer, for you, will make application to your state water pollution control agency.

PHS
Approves plans
Approval of plans by PHS means bids may be asked and contracts awarded. PHS will also approve contract awards, as a final requirement.

You
Get your money

ahead—as may already be happening.)

At the state level the basic problem is how to establish priorities for disbursement of the aid. From their meetings with state agencies around the country, the PHS people report that this problem will be solved without any difficulty. But from what the state sanitary engineers say, it remains a tough nut, yet to be cracked.

It is at the municipal level that real enthusiasm for the federal-aid idea is to be found. PHS already has received unsolicited queries for information from 4,000 communities.

Other queries are directed to the state agencies. The interest so far has been tremendous.

• **Machinery being assembled**—All that can be told the cities for now is that the application forms for financial aid are in the Bureau of the Budget for approval (a necessary prerequisite) and that the bureau has asked Surgeon General Burney for criteria governing propriety of federal aid before it issues its approval. Such propriety criteria are not intended or expected to infringe on the primary role of apportioning the aid which is given to the states under the law.

Forms awaiting Budget Bureau clearance cover the steps to be taken from a city's application for a grant to actual award of the grant by the Surgeon General. These steps will be about as presented in the accompanying box, but this is not necessarily the exact sequence. It is not intended to make all states conform to a rigid, federally dictated procedure.

PHS regional offices will figure heavily in administration of the aid provision. They will be on hand to fill in personnel gaps in state agencies and help process applications. It is also expected that consulting engineers will help expedite things by discussing with state agencies the proposed projects of their clients, the municipalities.

State sanitary engineers are as much or more concerned with criteria as are their cousins in PHS. But while PHS is involved in establishing propriety of aid, the states must find ways of fixing priority for it. Projects certified for aid by the states are intended under the law to have priority on the basis of financial as well as water pollution need. And the financial need is a quantity not previously of so much concern to state sanitary engineers.

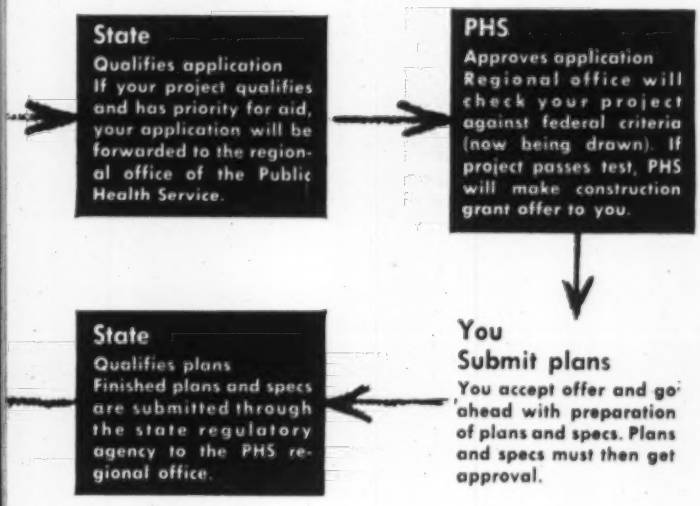
• **Figuring who should get aid**—Indiana's Blucher Poole says his Stream Pollution Control Board is considering the median income of families and unrelated individuals as a measure of a community's ability to pay. H. E. Moses in Pennsylvania plans to use average income in some way.

California's Vinton Bacon reports study of a point system based on assessed valuation per capita and construction costs per capita. A high construction cost and low valuation would be good

Mark Hollis . . .

"Reports from around the country indicate that for the moment letting of contracts for the construction of sewage treatment works has slowed down somewhat. City officials are naturally reluctant to take any steps which in their opinion might make it difficult or impossible for their communities to qualify for a federal grant under the new program. We are confident that this situation will clear up in a relatively short time. As the President pointed out in approving the new act, federal aid will not be available to all communities. The President urged that 'no community with sufficient resources to construct a needed sewage treatment project without federal aid, postpone that construction simply because of the prospect of a possible federal grant.' I am sure that communities with the necessary resources will see the good sense of the President's advice and that those communities which can go ahead on their own will do so."

of steps similar to these . . .


State
Qualifies application
If your project qualifies and has priority for aid, your application will be forwarded to the regional office of the Public Health Service.
PHS
Approves application
Regional office will check your project against federal criteria (now being drawn). If project passes test, PHS will make construction grant offer to you.
You
Submit plans
You accept offer and go ahead with preparation of plans and specs. Plans and specs must then get approval.
State
Qualifies plans
Finished plans and specs are submitted through the state regulatory agency to the PHS regional office.

evidence of a city's need for aid, it is figured. However, California in its present thinking would be influenced more by the pollution need than by the financial situation in establishing its priorities. This is not final policy, yet.

There's additional evidence that the state sanitary engineers may concern themselves more with pollution than economics where they set priorities for aid:

Washington's E. F. Eldridge expects to assign priorities on a basis of how acutely a plant may be needed. Ohio's Fred H. Waring indicates the Pollution Control Board there will have to make financial needs secondary to pollution control needs if the available amount of money is to be made to do most good.

John Wakefield of Florida's Bureau of Sanitary Engineering points out a peculiar problem there: The $5,000 homestead exemption, resulting in low taxes, has meant that almost all recent projects have been revenue financed. Fiscal reports from cities will be needed to determine where aid is needed in future revenue-financed work.

• **Its possible effects**—ENR correspondents have asked in the states whether the federal money will inspire cities planning primary treatment to build secondary treatment instead. Not if primary facilities were the right answer in the first place, was the concensus.

It was asked if the aid, which definitely is intended to favor the smaller communities, might not discourage the desirable regional approach with communities banding together. Only Michigan's Loering Oeming, and Eldridge of Washington thought this could happen. D. F. Smallhorst in Texas thinks the law could conceivably have the opposite effect, encourage the authority approach.

In Texas, incidentally, Smallhorst has been put in charge of a Division of Water Pollution Control newly organized under the State Department of Health—just since passage of the federal water pollution law. V. M. Ehlers is still state sanitary engineer.

With most of these key state sanitary engineers unhappy over, but resigned to, federal aid, some go so far as to suggest the three-month-old law be changed.

A Kansas spokesman says: Either eliminate the construction grants provision or make enough money available so that every eligible community could receive aid to 30% of project cost.

Actual recommended changes under consideration by the State and Territorial Health Officers include: Redistribution of grant funds to place the money in states where projects are ready for construction; increase in appropriations to permit construction grants to all eligible projects.

• **Its long-range effect**—With all the present unrest and disruption of construction's progress, this phase of getting the pollution law to work should be over soon and should not have had either serious or lasting effect. There are rays of sunlight coming through even now as some states report no lagging of cities under order to build plants. The smart communities with plants ready to build are reported to realize that a sizable future cost increase might erase any federal aid they might get by waiting. And in several states it is evident from requests for information that communities not formerly planning sewage works have new interest in building facilities since the aid money became available. Incidentally, federal officials guess that 80% of the grants money will go to cities under 125,000 population. The law specifies a minimum of 50%.

Finally, behind the passing cloud of confusion there is the brightest light of all: Sewage works construction overall is booming, headed for a $600-million year, according to ENR's forecast. Despite tight money, and even granting some slowdown through the current period of waiting-for-aid, ENR predicts another $600-million year next year (ENR Sept. 13, p. 144) in this ever-lagging field of construction which has never in the past amounted to more than $431 million in contract awards (1953) and which only last year was back to $402 million.

Of course, final effect of the $50 million in federal aid this year and $500 million of the next 10 years remains to be seen.

Result of a Rescue

Sewer gas is responsible for two deaths in N. Y.

Two men were killed last week at Hastings-on-Hudson, N. Y., while assisting in the rescue of a third man who had been overcome by fumes inside a sanitary sewer.

During the rescue efforts, both men also were overcome by the fumes and were carried by flowing waste for more than a half-mile through an underground trunk sewer. The victims were employees of the Westchester County Department of Public Works.

The third man, an employee of a sewer contractor, later was reported in serious condition at a nearby hospital where he had been taken for immediate treatment.

Police said the accident occurred while the contractor's employee was connecting a 6-in. service sewer pipe to the 8-ft trunk sewer that leads to the county sewage disposal plant. When he called for assistance, the two county employees entered the manhole and started to lift him to other rescuers at the surface. A few moments later they were swept from view.

Members of the rescue party recovered the bodies of the men at a manhole opening scarcely three miles from the disposal plant.

APWA convention hears some pointed answers to the problem of . . .

Authorities vs. Elected City Officials

A spirited attack on special governmental units highlighted the 62nd annual convention of the American Public Works Association held in Fort Worth, Tex., last week.

Spearheading the assault was Dennis O'Harrow, Executive Director of the American Society of Planning Officials who lead off a four-man panel. Mincing no words in characterizing local authorities, he said, "We exchange one set of intelligent politicians sensitive to the citizens wishes for a group of inept politicians who, because of their amateur standing, don't give a damn about the citizens."

O'Harrow made clear this sweeping statement did not apply to all special districts and authorities, and granted that one category of these agencies—those established to pass over political boundaries—may sometimes be justified. But this was all he allowed. He saw great danger in the multiplicity of special agencies established to escape financial debt limits (adjust the debt law); to undertake projects of doubtful governmental concern such as buildings for industry (there are better ways to attract industry); and to avoid imaginary political messes by removing the operation from the direct control of regular municipal authorities.

The danger, in O'Harrow's view which was enthusiastically applauded by most of the 1,000 convention registrants, is that the more single-purpose governmental units, the more obstacles to orderly municipal planning and growth.

Edward E. Reid, Executive Director of the Alabama League of Municipalities, followed O'Harrow and gave him support by showing how Alabama cities, by the intelligent use of some very liberal extraterritorial controls granted by the state legislature, have avoided the formation of special units of government. There are no state laws authorizing their formation and there has been no demand for them.

Some of the powers granted to Alabama cities in the public works field are the authority to construct street and sewers within three miles of the corporate limits and to assess property owners for same; the authority to extend gas, electric and water systems for an unlimited distance and the authority to enforce subdivision, planning and zoning regulations up to five miles outside their corporate limits.

Panelist August O. Spain, Chairman of the Department of Government at Texas Christian University, gave indirect support to the O'Harrow-Reid position by boosting home-rule annexation laws of Texas. Those laws enable cities to annex contiguous areas in a relatively unencumbered manner and are a boon to orderly, well planned growth, in Spain's opinion.

• Employee Training

Another panel—on employee training—pointed up the growing interest and action being taken by public works leaders on the manpower problem, more serious in the municipal field than in many others. The avid attention and favorable comments of the audience was the most significant aspect of the discussions; much of what the speakers said was old hat, at least to personnel men.

The final panelist called on APWA to add to its national staff an expert to devote full time to employee development. Chances are that the association will respond.

APWA's training committee is soon to publish a comprehensive report and the convention went on record requesting engineering colleges to include a municipal option in their undergraduate curricula and to offer a master's degree in municipal engineering and administration.

• Municipal Sanitation

Municipal sanitation received a big play in two general session papers. One by Andrew W. Mulrain, New York City's Commissioner of Sanitation, described Gotham's $60-million a year ten-phase clean city program. Among the points: a house-by-house survey to ascertain the source of the 300 million pounds of material that annually finds its way to the streets of New York, a 300-man inspection force that in 1955 gave out 130,000 summonses resulting in $500,000 worth of fines, alternate-day alternate-side-of-street parking regulations rigidly enforced by tow trucks (minimum fine $15 plus $10 towing charge), and a no fooling around crackdown on owners of empty lots wherein if necessary the Sanitation Department cleans them up and charges costs to owner's tax bill.

Scottish visitor N. M. Wilson, president of the International Association of Public Cleansing, reviewed refuse disposal and street cleaning practices in Great Britain (much the same as in the U.S.) and then voiced great confidence in a recent composting system employed by his own Edinburgh Sanitation Department. Refuse enters a revolving drum and forms a finely divided material that easily and quickly composts with liquid sludge from the sewage treatment plant in three to five days, producing a dry, inoffensive compost of first-class value as a fertilizer.

In a "shirt sleeve" session on refuse disposal, Lou Weaver, U.S. Public Health Service sanitary engineer, pointed out that the increasing rate of installation of garbage disposal grinders in households indicates that by 1965 about half of the urban population of 84 million will be using this method. Weaver also documented the trend toward sanitary landfills (which the British euphemistically call land reclamation)—800 cities now compared to 100 in 1946.

• Electronics

Applications of electronics in public works were surveyed by Howard Jacoby, Associate Editor of ENGINEERING NEWS-RECORD in a general session talk. He measured the ever-growing use of elec-

State to Be Asked to Curb Authorities

A new law designed to bring all state and local commissions and authorities under uniform administrative and budgetary control will be asked of the 1957 Pennsylvania legislature by Attorney General Herbert B. Cohen.

Concerned over purported abuses of power by many such groups—notably the Pennsylvania Turnpike Commission, with which the Leader Administration has been carrying on a running battle—Cohen has stated: "The correction of this situation should be one of the first problems tackled by the next legislature."

As a result of findings in recent investigations into activities of the Delaware River Bridge Commission and the Turnpike Commission (ENR Sept. 13, p. 24), the Attorney General has started a study of financial operations of 977 municipal authorities (ENR June 14, p. 139).

Cohen says: "The free hand accorded themselves by the larger commissions has set a trend which finds most of the local authorities adopting the same independent policy on their operations."

In an open bid to eliminate or at least hamstring the commission type of government, the Democratic Administration will ask for controls on the Delaware River Joint Toll Bridge Commission, the Pennsylvania Turnpike Commission, the Delaware River Power Authority, and more than 500 local authorities.

ROBERT L. ANDERSON . . .
. . . New APWA President

tranic computers in engineering, in terms of its application in highway design and construction (ENR July 19, p. 29), design of rigid frame structures, analyzing water distribution systems by the Hardy Cross method and preparing construction progress reports. Other recent applications of electronics described were use of FM radio to replace multiconductor cable in transmitting control signals to traffic lights, radar traffic detection in a system that automatically and continuously allocates green time to favor the heaviest traffic flow, and measurement of liquid levels—using radioactive isotopes in a float.

In another general session talk, Maj. Gen. J. S. Bragdon, special presidential-assistant for public works planning, stated the case for advance planning.

A point of probable controversy in connection with the interstate highway system was touched on by Stanley C. Palmer, City Engineer on Kansas City, Mo. He felt he mirrored the views of his contemporaries in other cities as he called for urban portions of the interstate system to be located and designed for maximum usage by local traffic instead of primarily for through traffic.

For APWA, the Fort Worth meeting was the biggest ever (1,415 registrants, including wives, and 68 exhibitors). Robert L. Anderson, Superintendent of Public Works for Winnetka, Ill. was elected President, succeeding Edward P. Decher of Newark, N. J. Sol Ellenson, Director of Public Works in Newport News, Va. is the new vice president.

Casimir Rogus, engineering head of New York City's Sanitation Department received the Charles W. Nichols Award, a $500 prize for leadership in municipal sanitation. The second annual ENGINEERING NEWS-RECORD Fellowship, a $1,000 stipend for advanced study of public works engineering or administration, went to Dan Blankenship of Corona Del Mar, Calif., who will do his post-graduate work at the University of Oklahoma.

U.S. vs. Foreign

Turbine issue persists at Ft. Gaines, Priest Rapids

The question, "U. S. or foreign turbines?" continues to be an issue at two projects this week—the Ft. Gaines, Fla., hydropower plant and Priest Rapids Dam.

As a result of a taxpayer's suit, the Grant County (Washington) Public Utility District has decided to go ahead with plans to accept British-made turbines on Priest Rapids Dam project.

Merritt-Chapman & Scott Corp., contractors on the job, originally had submitted the British bid in their contract bid. Later it was decided to switch to turbines made by Allis-Chalmers, which would have cost an additional $500,000 (ENR Sept. 20, p. 26). The taxpayer's suit was filed to prevent this switch and the commissioners, rather than delay the project, decided to go ahead with the British turbines, which are to cost approximately $12 million.

The PUD commissioners had decided to switch to Allis-Chalmers on the basis that this company was experienced in the manufacture of large turbines, the British firm was not.

Commissioner George Shuster said the legal delay, combined with the river's high water stages, would set the project back at least a year.

• **Ft. Gaines project**—The Corps of Engineers in re-advertising for bids on the supply of turbines for the Ft. Gaines, Fla., hydropower plant has sidestepped—temporarily—the issue of "Buy American" from U. S. suppliers.

For four months American turbine manufacturers have been waiting to see if the Corps of Engineers would award the contract to English Electric Co., whose bid was approximately 17% lower than the nearest U. S. bid.

Officials of the Corps state that they are re-advertising for bids on the basis of "ambiguities" in the specifications submitted by both U. S. and foreign suppliers.

The Eisenhower Administration has been under sharp criticism for months for lowering the preferential margin to U. S. manufacturers from the traditional 25% to as low as 6% to give foreign suppliers a better chance in the American market. Turbine as well as generator and transformer manufacturers have complained that with the reduction foreign suppliers can underbid U. S. competition at will.

Recently the Hydraulic Section of the National Electrical Manufacturers Assoc. presented its case to the Office of Defense Mobilization. The NEMA group told the ODM that the decision as to whether federal procurement of hydraulic turbines should be limited to American suppliers could not continue on a case-by-case basis.

"The industry is too vulnerable to federal procurement policies to survive piecemeal determination of its future," said the NEMA.

In support of its argument for tighter restrictions on foreign suppliers, the NEMA said that the market for U. S. suppliers abroad already had been destroyed by foreign manufacturers.

Navigation or Power

The Missouri River Basin argument starts anew

First evidence of a new rift between supporters of power and navigational interests was evident last week at a meeting of the Missouri Basin Inter-Agency Committee at Mitchell, S. D.

It came after a talk by Joe W. Grimes, chief engineer and executive officer of the South Dakota Water Resources Commission. Grimes' speech emphasized the importance of winter generation of power at the Army Engineers' and Bureau of Reclamation's Missouri River dams.

Generally, water stored in the winter time is released in summer to maintain a navigable depth in the Missouri River during the summer.

Winter production, Grimes declared, governs the amount of firm power that can be produced and therefore increases total revenue obtainable from the sale of electric power from the dams.

"Releases for a single purpose (i.e. navigation) is not compatible with the concept of multiple purpose operation," he said. "Put rather bluntly, I believe that we have let and are letting our desire to please people in the basin warp our business judgment and that we have made and are making some commitments which our water supply so far will not justify."

Grimes' remarks brought opposition from supporters in the lower basins who regard navigation as a big factor in the future of that area.

Gov. Leo Hoegh of Iowa, who is chairman of the Missouri River States Committee, said: "I feel that there are three objectives in the development of the Missouri River. They are flood control—which has been accomplished—navigation, industrial development and use of power."

"All three must survive," Governor Hoegh said. "There must not be a favoring of one over the other to such an extent that we will lose any. Certainly navigation must be strengthened because it helps us industrially. But the objectives of the development are about in the order I've outlined."

Illinois Kicks Off Tollroad Program

Construction now is under way on Illinois' 193-mi system of tollroads—with target completion dates of Dec. 31, 1957, for the northwest route to Rockford and South Beloit, and the east-west route to Aurora, and one year later for the Tri-State route encircling Chicago.

Groundbreaking ceremonies, held Sept. 22 in a cornfield beside U.S. Highway 20, just east of Rockford, officially marked the start of construction on the $415-million project. Following speeches by Gov. William G. Stratton of Illinois, and Charles Dearing, Executive Director of the Illinois State Toll Highway Commission, a $1-million fleet of earthmoving equipment went to work in earnest.

Public Constructors, Inc. Camden, N. J., holds a $3-million contract for constructing a 4.8-mi section of four-lane divided highway on the Chicago-Rockford route, which was the scene of groundbreaking ceremonies (ENR Aug. 30, p. 24). The company has 440 calendar days to complete the section.

Major contract items on this section of tollroad together with unit prices submitted by Public Constructors include: roadway excavation, 1,100,000 cu yd at $0.43; selected subgrade, 60,000 cu yd at $2.50; 100,000 cu yd of granular subbase at $2.50; a 10-in. reinforced portland cement concrete pavement, 180,000 sq yd at $5.60; and 3-in. bituminous concrete shoulders, 105,000 sq yd at $1.25.

Public Constructors' unit bid prices for bridge construction include: $45 per cu yd for reinforced concrete; $0.11 per lb for reinforcing steel; $2.00 per lin ft for erecting both 36-in. and 48-in. prestressed-concrete beams; $55 per lin ft for furnishing and driving prestressed concrete cylinder piles; and $5 per lin ft for furnishing and erecting the aluminum handrail.

As explained by Dearing, this 4.8-mi initial construction section near Rockford will be representative of the project as a whole. "The toll-way system will embody the latest advances in highway travel convenience," said Dearing.

This so-called northwest route will provide direct access from the Rockford-Beloit area to downtown Chicago through a direct connection with the Northwest Expressway. There will be no traffic lights or stop signs and—with the exception of a brief pause at toll barriers—no interruption to the flow of high speed traffic. Passenger car tolls for the 88-mi route will be $1.25 one way. For lesser distances, passenger car tolls will average 1.6 cents per mile.

The 80-mi Tri-State route starts on Chicago's south side, and cuts through and around the Chicago metropolitan area to connect with U. S. Highway 41 just south of Wisconsin line. The 25-mi east-west route is a continuation of the Congress Street Expressway, merging with U. S. Highway 30, a short distance west of Aurora. The 88-mi northwest route begins at U. S. 51 just south of South Beloit, crosses the Fox River north of Elgin, and connects with the Northwest Expressway.

Placing Record Claimed For Submarine Pipeline

Working 16 hours a day for five days, the Collins Construction Co., Port Lavaca, Tex., completed a 60,000-ft pipeline under Corpus Christi Bay, Sept. 17, for what is claimed to be a world's record for speed on this type of job. The 10¾ in. dia concrete-coated steel pipe, will carry natural gas to a Reynolds Metals Co., plant at La Quinta, Tex.

Water at the site is up to 55 ft deep, and there were winds up to 35 mph at some stages of the operations. The line was installed in 4,000-ft sections, using special methods of lateral control and controlled buoyancy and flotation developed by the contractor. According to S. V. Collins, president of the company, the cost of laying the marine line compared favorably with that of lines of the same type and quality laid on land.

The previous world's record for submarine pipelines was established in 1953 when J. Ray McDermott placed 55,000 ft of the same dia pipe in 14 days in waters offshore of Louisiana.

Westinghouse to Develop Reactor for Yankee Electric

Westinghouse Electric Corp. has been awarded the contract to develop the nuclear reactor for Yankee Atomic Electric Company's new atomic electric generating station near Rowe, Mass.

The Atomic Energy Commission will assist in the development and operation of the 134,000-kw station which is scheduled for completion in 1960. Estimated cost of the new station is $35 million.

Yankee Electric, with headquarters in Boston, was formed by 12 of the major electric companies in New England for the specific purpose of building this commercial atomic power plant.

The nuclear portion of the plant will be of the pressurized water type, similar to the one which is being installed in the nation's first full-scale atomic electric plant at Shippingport, Pa.

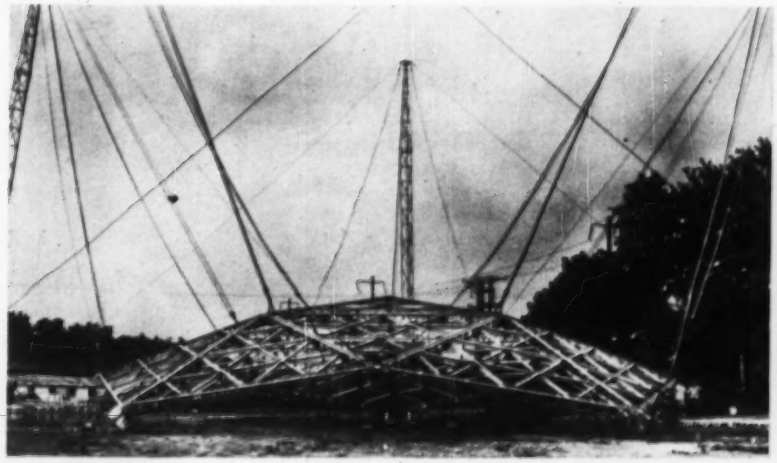
The Dalles Dam: The Finish Is in Sight

With Oregon's magestic Mt. Hood in the background, The Dalles Dam project nears completion with final closure of the river scheduled for Mar. 1, 1957.

Looking downstream on the Corps of Engineers' $260-million giant, the entrance to the old The Dalles-Celilo Canal may be seen in the foreground along with the east fish ladder, a concrete non-overflow section, the powerhouse, another non-overflow section and then the spillway dam across the river.

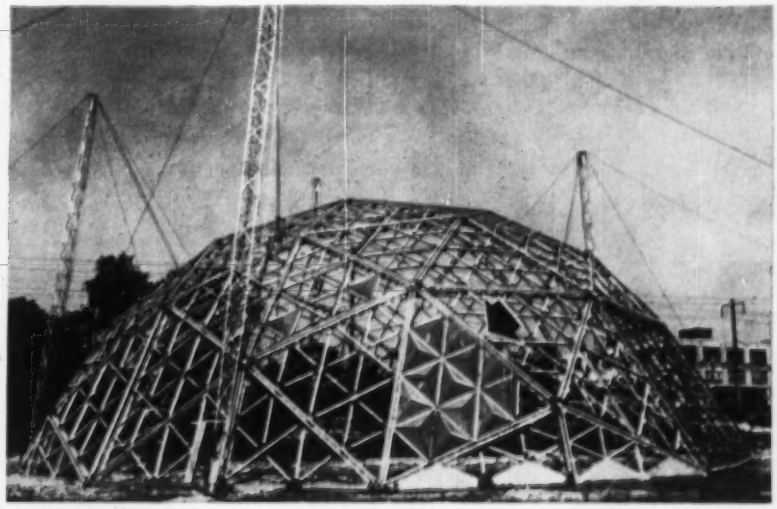
Beyond the spillway dam is the Wasco County Dam with the navigation lock at extreme right.

Col. Jackson Graham is the Portland District Engineer in charge of the new multiple purpose project.



TOP OF DOME was framed at ground level, then raised a few feet by gin poles so other trusses could be attached. Procedure was repeated until all parts were assembled.

GIN POLE with hand winch was one of five used to raise frame during job.



AFTER COMPLETION of the 117-ft-dia, 46-ft-high frame, it was covered with 1,112 plastic-bonded glass-fiber panels, a few of which appear in the photo (arrow).

BUCKMINSTER FULLER in completed aluminum framework of dome he designed.

Dome Built in Reverse—Top First

A new aluminum and reinforced-glass-fiber dome manufactured for the U.S. Marine Corps is said to be the biggest such structure yet built. Designed as a portable hangar or repair shop, the prototype test model has a base diameter of 117 ft and a center height of 46 ft. Although the dome covers an area of 10,700 sq ft, it weighs less than 52,000 lb. It can be disassembled into packages of 100 lb or less and transported in two cargo planes.

Framing for the dome comprises 80 plane triangular trusses, measuring about 22 ft on a side, and other extruded members. The main triangles are subdivided into 16 smaller triangles, each framing a shallow pyramid of glass fiber bonded with polyester resin.

Adjacent trusses are joined at the corners by bolts and gusset plates. All frame members are made of aluminum alloy. The glass-fiber panels attached to the frame weigh 13 lb each.

The dome is designed for 20-psf vertical load, 150-mph wind and the weight of a jet fighter plane, suspended inside from several points. No structural function is assigned to the glass-fiber panels.

A novel method of erection was adopted by the Washington Aluminum Co., of Baltimore, manufacturers of the dome, in setting it up for display. Beginning at ground level, they assembled the five uppermost trusses of the dome. Then, by means of five gin poles set up around the site, they raised the assembled trusses a few feet off the ground and attached more trusses. They repeated the procedure until the assembly was complete.

Auxiliary lines from the gin poles were used during erection to handle sub-assemblies too heavy for man-handling. The final lift, elevating the top of the dome 46 ft above the ground, imposed a load of about 16,000 lb on the five gin poles. Each gin pole was equipped with a hand winch and operated by one man.

After being displayed in Baltimore, the dome will be disassembled and flown to the Mojave Desert for field testing by the Marine Corps. Simplified by a nine-color coding system for parts, field assembly will take 30 men 2½ days, according to the manufacturer's estimate.

The dome was designed by R. Buckminster Fuller, designer of the Ford Rotunda dome (ENR May 28, 1953, p. 31).

ADVERTISING

This advertisement appeared in *The Saturday Evening Post*, Sept. 29, 1956.

North Carolina's new U.S. 70—a four-lane divided highway with safe, gentle curves.

BLACK MOUNTAIN GRADE WAS A KILLER

Driving the old U.S. 70, east of Asheville, Paul Smith used to dread those hairpin turns. Now, on one of North Carolina's most spectacular highways, he makes the 1000-foot climb safely—in one third the time!

The mountain ranges of North Carolina rise out of the Piedmont like the side of a roof. When the original U.S. 70 was built, 30 years ago, its two narrow lanes of concrete scaled Black Mountain by a series of switchbacks. In the eight miles between Old Fort and Ridgecrest, there were 84 turns so sharp that trailer trucks could barely negotiate them. The roadside cliffs were scarred by many crashes.

Paul Smith, local businessman, says, "Only a year ago the best time I could make on that stretch was 20 minutes, and I drove it with my heart in my mouth." Today North Carolina's Highway Commission has relocated the route, building a four-lane divided expressway that cuts the distance to 5.7 miles, the time to 6½ minutes. Long, sweeping curves and easy grades, none steeper than 6%, permit a safe speed limit of 55 miles an hour.

Those huge cuts and fills cost a lot of money, but everyone agrees now that it's worth it.

North Carolina has a progressive highway program. Its secondary system is one of the best in the country; and in proportion to area and population its 32,100 miles of paved roads lead all other states. Yet an estimated $610,000,000 needs to be spent on primary highways in the next decade. Federal highway aid will bring closer the dates when interstate expressway sections will be open to traffic. However, the basic problem of financing these and all other roads remains with the states.

Good roads save more than they cost—in time, in lives, and in actual cash. For proof, and for suggestions on how you can help, write for free booklet, "Road Block." Send a card today to Dept. 10, Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

REG. U.S. PAT. OFF.

DIESEL ENGINES · TRACTORS · MOTOR GRADERS
EARTHMOVING EQUIPMENT

Old U.S. 70—a narrow two-lane road with 84 hairpin turns.

Wherever you see Caterpillar machines working on your roads, you can be sure your state is getting its money's worth.

THAT BACKS THE ROADS YOU BUILD

The powerful impact of advertisements like the one on the opposite page, running in full color in *The Saturday Evening Post*, has helped rouse America to the need for new highways. Building them is your business. And you can build them faster and at lower cost today because of the great new equipment Caterpillar puts at your disposal.

In the same region of North Carolina described in the *Post* advertisement, Asheville Contracting Co. is using Cat* DW21 Tractors and No. 21 Scrapers, push-loaded by D8s. In the photograph they are shown at work on the construction of a new section of U. S. 70, bypassing Morganton and Hickory, N. C. It's a job that requires moving 3,500,000 cu. yd. of clay and shale rock, with plenty of deep cuts and fills.

Superintendent W. W. Ledbetter says: "In twelve years using construction equipment, it is my opinion that Caterpillar builds the best. It's more dependable—more economical—and there's good dealer service."

Caterpillar research, engineering and manufacturing are geared to a single goal: to provide you with constantly improved machines—to help you do more work and make more profit. Year by year they give you greater power and efficiency, longer work life. And Caterpillar Dealers back you with reliable service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

LEADERSHIP IN ACTION

Supplemental Guide

NSPE meeting to discuss an ideal registration law

The fall meeting of the National Society of Professional Engineers, to be held in White Sulphur Springs, W. Va., Oct. 25-26, will give members their first opportunity to examine in detail the completed draft of an "ideal" registration law, which a committee of the society has drawn up.

The purpose of the law is to provide a guide in writing amendments to state registration laws. It is not intended, it is stated, to replace the Model Law but to supplement this existing guide with a document that includes more present day thinking on some important questions.

One of these questions is the practice of engineering by corporations, and on this the Ideal Law states: "Professional Engineers may practice under this act as individuals, partners, or through joint stock associations or corporations. In the case of practice through a joint stock association or corporation, it shall be required at all times that the chief executive officer and a majority of the other executive officers and a majority of the directors be professional engineers under this Act." The Ideal Law also poses other modern questions to guarantee lively discussion, both at this meeting and later at the spring meeting (Charleston, S. C., Feb. 15-16, 1957) when other engineer organizations will be invited to take part.

As is usual for these meetings, the NSPE executive committee will convene in White Sulphur Springs the day before the convention begins.

Superstructure Bids Asked For St. Lawrence Crossing

Bids will be opened Oct. 10 for the superstructure of the international high-level bridge across the South Cornwall Island Channel of the St. Lawrence River, together with viaduct spans on both approaches and earthfill and pavement of the mainland approach.

The bridge, a suspension type, to cost $6 million, will have a 900-ft main span and 450-ft side spans (ENR Aug. 2, p. 22). There will be 2,145 ft of viaduct spans. The New York State approach fill will be 680 ft long on a 4% grade.

According to the Buffalo, N. Y., District of the Corps of Engineers, construction agent for the St. Lawrence Seaway Development Corp., the project must be ready for traffic by July 1958.

Substructure is to be built by the St. Lawrence Seaway Authority of Canada and is scheduled for completion by October 1957.

Skyhook for Surveying

Power dam reconnaissance in the rugged Cascade Mountains of southwestern Washington—ordinarily a slow and rigorous process—is making faster and easier progress, thanks to the helicopter.

One job benefiting from the airborne assist—the fourth phase of a five-part scheme sponsored by Pacific Power & Light Co.—is the Muddy hydroelectric project. It will be built on the upper Lewis River, a Columbia River tributary that runs through a steep-walled canyon high in the Cascades.

With the helicopter, pipe and other drill gear are hauled across ravines and over ridges to prospective sites. Ordinarily a four-hour trek using pack animals, the job now requires only about four minutes.

The first two phases of the program are already in operation, in the form of a pair of power dams—100,000-kw Merwin and 133,000-kw Yale. Third step is proposed Swift Dam, with a 256,500-kw potential that PP&L will develop jointly with Cowlitz PUD.

Nuclear Information Group Will Aid Utility Companies

A six-man committee to study various types of nuclear power plants was formed recently in New York by the Edison Electric Institute with the prime mission of keeping the private utility companies informed on new developments.

The committee, all top utility executives, will be headed by James F. Fairman, engineering vice president of Consolidated Edison Co.

According to Donald S. Kennedy, president of the Institute, the new group will have $150,000 at its disposal for investigations and will use outside engineering and consulting firms as it sees fit.

Who Will Pay?

Ohio mayors still solicit state-financed expressways

Mayors of Ohio's largest cities plan to continue their fight for state funds in building expressways through their cities.

They received encouragement recently in Columbus at a highway conference when Detroit Commissioner of Public Works Glen C. Richards declared that states should pay for such expressways through cities.

Under present federal-state arrangements the federal government pays 90% of the cost of the interstate highways and the states provide 10%. But Ohio agrees to its responsibility of 10% of the cost only in areas that are located outside metropolitan city limits (ENR July 26, p. 24).

In opposition to this stand Richards said: "The state cannot build only the rural portions of such highways and leave them at the city limits."

Regardless of attempts to compromise, the Ohio Highway Construction Council is standing pat on the formula that cities provide the 10% for expressways inside the city limits.

Support for the mayors came recently from Gov. Averell Harriman of New York. He announced that New York State cities having urban arterial projects designated as part of the interstate system would not have to contribute to the cost because the state would put up the 10% for both city and rural routes.

Record Won't Be Broken Yet, One Long Becomes Two Shorts

Sometimes records for records' sake must go. What would have been one of the world's longest pipeline suspensions—1,300 ft—will now be two shorter spans, one of 700 ft and another of 600 ft. The spans are part of a 70-mi gilsonite-water-slurry pipeline from Bonanza, Utah, to Grand Junction, Colo. Gilsonite is a pure asphalt found mainly in Utah.

A contract has been let to United States Steel Corp. by American Gilsonite Co. to build one 700-ft span across the White River and, a mile to the east, to construct another across Evacuation, Wash. As originally conceived the pipeline would have jumped both the White River and Evacuation, Wash., in one 1,300-ft span.

The pipeline will transport gilsonite to a coke-refiner and high-test gasoline producer, which American Gilsonite Co. is erecting just south of Grand Junction.

Engineers Ltd., have been awarded the contract for the 70-mi line.

HOW MOBILE CAT* POWER PAYS OFF FOR LAMBERT BROS., INC.

A D397 Mobile Electric Set provides crusher power on a job for Lambert Bros., Inc., near Greenback, Tennessee. The 315 KW D397, Caterpillar's biggest trailer-mounted electric set, is well within highway weight and size restrictions.

When Lambert Bros., Inc., Knoxville, Tennessee, received the contract to furnish 26,000 tons of base material for road construction near Greenback, it set up the operation pictured here. The company provided its own power with this Cat D397 Mobile Electric Set. The 315 KW unit provided the power to run the Cedarapids crusher, working 8 hours a day, 5 days a week. Output averaged about 900 tons a day. Said Lambert's Ben L. Greene: "I like the D397 because it gives us a maximum amount of operation with a minimum amount of maintenance."

For dependable electric power, *when* it's needed and *where* it's needed, you can't beat Caterpillar Electric Sets. They're available in a complete range of sizes, up to 315 KW, for use in emergency or full-time operation. Each is a complete unit, mounted on skids, semi-trailer or trailer. Easy to hook up and easy to operate, they deliver steady voltage. There's one that fits your needs and—as Mr. Greene points out—provides maximum performance with minimum maintenance.

Wherever you move these sets, you always have the plus of prompt service, right on the spot, from your nearby Caterpillar Dealer. For complete information about these versatile power plants, see him soon.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MODERN, HEAVY-DUTY PORTABLE ELECTRIC POWER

"IDEAL" aggregate for Florida market

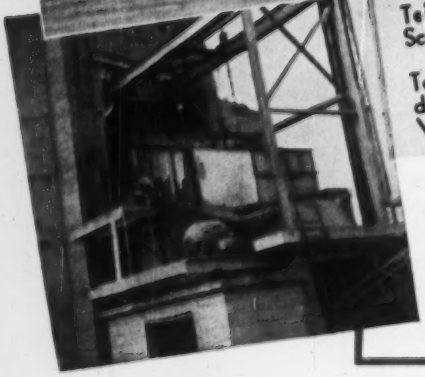
TELSMITH

designed Miami plant of IDEAL Crushed Stone Co., produces 400 tons per hr. crushed limerock and sand.

Telsmith 30" x 25' Twin Screw Sand Classifier.

•

Telsmith 5' x 12' double deck special heavy-duty Vibro-King Screen.



● With a capacity of over 400 tons per hr; 60% rock, 40% sand; this Telsmith-designed plant makes 6 sizes: ¾" to 2½" ballast; 1"-¾", ¾"-½", ½"-⅜", ⅜"-3/16" rock; 3/16" sand. A 4½-yd. dragline digs the raw material; self-dumping barges transport it to plant.

● Ballast goes to railroads. Aggregate qualifies for Florida State, County, and City specs; U. S. Army Engineers; ready-mix, concrete-block, and concrete pipe plants. Send for Bulletin 266.

Q-32

PLANT EQUIPMENT—Two 60" x 8' Heavy Duty Plate Feeders • 5' x 12' Special Heavy Duty Vibro-King Scalper ahead of 30" x 50" single roll primary crusher • 5' x 12' 2-deck Vibro-King Scalper ahead of reversible impactor secondary crusher • 5' x 12' 2-deck and 5' x 14' 3-deck Vibro-King Finishing Screens for rock sizing • 2' x 8' 1-deck Vibro-King Screen for fine sand • 30" x 25' Twin Screw Sand Classifier for coarse sand • 24" x 20' Single Screw Sand Classifier for fine sand • All Telsmith except crushers.

SMITH ENGINEERING WORKS

500 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • Cable Address: Sengworks, Milwaukee

Columbia Basin Pact

Federal agencies approve changes in original draft

Federal agencies have approved all provisions of the revised draft of the Columbia Basin Compact. The revisions alter priorities for water consumption to protect large federal installations in downstream states while allowing adequate supplies for upstream states.

The other major change from the original draft expands the term "major states" as commission members, and prevents the possibility of the five upstream states outvoting the two downstream states—Washington and Oregon—in matters involving water resources in the Columbia River Basin. This provision was changed at the request of Washington State.

Anderson H. Calvert, Secretary of the Compact Commission, said that "suggestions the states have been controlled by federal desires" in framing the compact are not true. "The compact commissioners have been trying to follow a practical course and avoid the possibility of Congressional objection or executive veto on the grounds of constitutionality."

Idaho, Nevada and Utah ratified the earlier draft and the commission expects these states to re-submit the pact to their 1957 legislatures. Washington, Oregon, Montana and Wyoming also must approve the draft, and then it must be ratified by Congress before taking effect.

Expensive Silt

Silting river is studied: Costly dam may be answer

A rapid silt build-up in the Snohomish River at Everett, Wash., which is threatening to curtail operations of lumber and kraft mills using the river, is under study by the Seattle District of the Corps of Engineers.

In recent years an increasing amount of water in the Snohomish River has been bypassing the main channel, going to Puget Sound through three sloughs. Engineers estimate that only 30% of the river flow actually follows the main channel at present.

With less water in the channel, the flow is slower. The slower the river flows, the more silt it drops. The greater the silt build-up, the less water will go down the main channel. Should this trend continue, the mills that are located on the lower reaches of the river will be unable to keep logs moving into their operations.

Logical solution seems to be construction of a costly dam, either across the river or across the mouth of Steamboat Slough, largest of the sloughs. The confined waters then would flow rapidly enough to move the silt into the deep waters of Puget Sound.

College Gets $50,000 Grant For Study of Traffic Safety

$50,000 grant for basic research in traffic safety has been made to Teachers College, Columbia University, by the American Automobile Association Foundation for Traffic Safety.

Columbia officials said that the studies—expected to take five years to complete—will take into consideration safety research programs that are now being conducted by other schools, so that there will be no duplication of effort.

The subject to be explored in both field and laboratory will include vehicles, roads and drivers, as well as the legal aspects of traffic safety.

Misuse of State Road Funds Is Under Probe in Kentucky

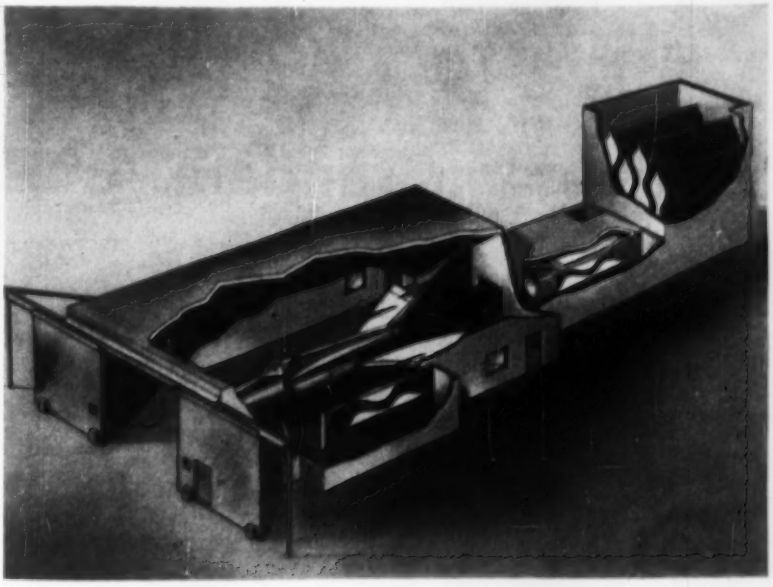
Charges that public funds have been used for construction of private roads and driveways in Harlan County, Ky., have resulted in discharge of three state highway department employees, investigation of others and preparation of legal action against private property owners who have benefited.

Some of these private roads are reported to have cost from $50,000 to $75,000.

Among examples cited were a bituminous farm road leading from State Route 217 and mine roads in the county.

Highway Commissioner Bert Kiser acknowledged that the charges—made by local newspapers—were "substantially correct."

He stated that his office has been investigating the Harlan County situation "for some time."



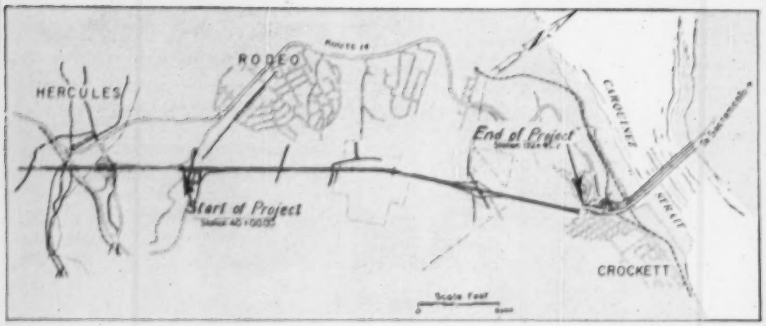
Silencer Building Quiets Jet Engines

Silence is golden, and community goodwill is worth plenty too, judging from Convair's outlay of nearly $1 million to muffle jet-engine noise at the firm's San Diego plant.

Under construction by Koppers Co., Baltimore, as part of Convair's F-102A interceptor program, four chambers—three for preflight engine runups (shown above), one for engine tests—will render engine roar inaudible half a mile away over other sounds in the area. Even in the immediate vicinity of buildings, noise will be damped enough to permit normal conversation.

The runup chambers will be 125 ft long, 60 ft wide and 35 ft high. Walls and sliding doors will be 12-in-thick concrete.

Fresh-air intake tunnels on each side of the section housing the plane will contain wave-shaped perforated baffles filled with glass fiber. Immediately behind the tail, exhaust gases will be diffused in water spray, then directed upward at the rear of the building through more wave-shaped baffles. The engine-test chamber will be similar in construction but will have an additional air-intake silencer.



To provide a freeway approach for the new Carquinez Bridge, earth will be moved at an ultimate rate of 40,000 to 50,000 cu yd per day from this three-mile stretch on U. S. 40, northeast of San Francisco

BIGGEST HIGHWAY CUT ever undertaken will remove 9,700,000 cu yd from this gap in the California hills.

Scrapers in Tandem Are Tools for Bigges

The biggest single earthmoving operation in highway construction history is getting in full swing on U.S. 40, northeast of San Francisco. The job—with 9,700,000 cu yd to be excavated from a single cut—will provide a freeway approach for the new Carquinez Bridge (ENR Dec. 15, 1955, p. 45). Much of the big yardage will be handled by tandem scraper units where one tractor will haul two scrapers with a total load of 40 cu yd.

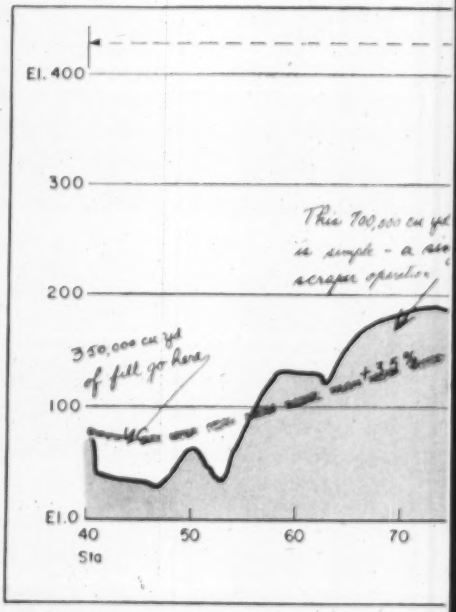
The big cut will have a maximum depth of 300 ft and it will be nearly a quarter-mile across. This cut, together with two smaller ones, is wrapped up in a single $7-million contract that will provide three miles of freeway. Contractor is a joint venture of Ferry Bros., John M. Ferry, Peter L. Ferry & Son, and L. A. and R. S. Crow of Glendale, Calif.

The freeway contract is one of several totalling $30 million which will provide a new bridge crossing—together with the necessary approaches—across Carquinez Straits, an arm of San Francisco Bay. This particular stretch of U.S. 40 has in recent years become a major traffic bottleneck. But major work had been delayed due to the high cost of providing additional capacity for the three lanes carried by the existing bridge. In early 1955 the state legislature authorized a bond issue that would be financed by tolls on the existing bridge and its new parallel structure (the old bridge is now a free structure). And because the big cut makes the freeway approach more expensive than usual highway construction, it was included in the bond financing.

All of this was accomplished before recent passage of increased federal financing for the interstate highway system (this includes all of U.S. 40 in California). But even with that additional money available, the new bridge probably would have to be a toll structure.

The bridge work connects with other freeway contracts financed out of regular highway funds, which will, when completed in 1958, provide a full freeway route from the San Francisco-Oakland Bay Bridge through Richmond and Vallejo—a distance of 35 miles.

Needless to say, the California Highway Department undertook extensive investigations before adopting the route that includes the huge cut. The existing bridge fixed the location of the Carquinez Straits crossing. Several possible alignments connecting with the bridge were considered. All of them involved extensive earthwork—although none as much as the adopted route. But all the alternate routes were more circuitous, and most were more expensive. The adopted route has the advantage of direct approach to the bridge complex without requiring a sharp turn.



HOW AND WHERE the big earthmoving

Highway Dirt Job

Geology of the cut area was also thoroughly investigated. The formation is primarily sandstone, some of it relatively hard. In addition, there are some clay and silt lenses. And there is minor faulting. The highway engineers, however, decided that the unprecedented cut could pierce these formations with nominal risk.

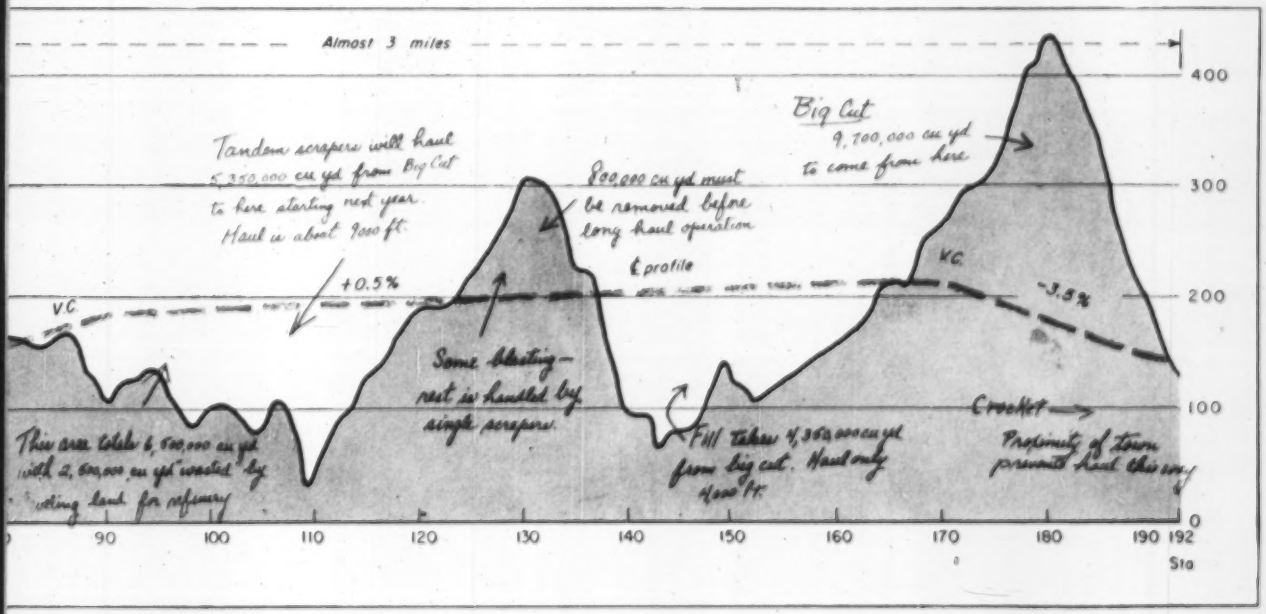
Preconstruction explorations indicated only nominal groundwater to be expected in the big cut. Nevertheless, the specifications call for installation of horizontal drains should water be encountered. These drains would involve 2-in.-dia, asphalt-dipped metal pipe placed in 3 to 4-in.-dia drilled holes. Pipe would be supplied by the highway department. This type of drainage system has been successful on California road jobs in the past for drying perched water in cut slopes.

On the entire job there are 11,200,000 cu yd of roadway excavation—bid by Ferry-Crow at 25.6¢ a cu yd. In addition to the big cut, there are two smaller cuts—one of 800,000 cu yd located midway on the job and another of 700,000 cu yd at the south end of the job.

Not all of the excavated material goes into highway fills. Some must go into disposal or waste areas. But this is—at least in part—an advantage rather than a disadvantage. Reason is that the alignment goes through an undeveloped part of a Union Oil Co. refinery. The oil company provided free right-of-way in return for filling in part of the area to make it more suitable for refinery purposes. So something like 2,500,000 cu yd of excavation is disposed of.

The big cut is located at the extreme northern end of the job. Virtually all haul from it is to the south. Reason is that between the cut and the bridge lies the small town of Crockett. And although the new freeway will cut quite a swath through town, it will be mostly on elevated viaducts. Thus, very little fill material can be used north of the cut.

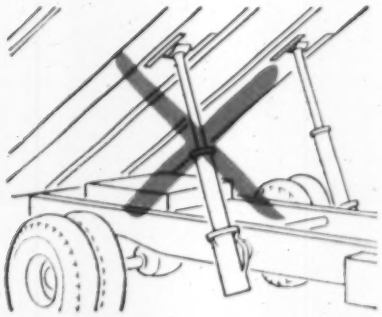
Location of the cut relative to the rest of the job together with location of the oil refinery excess fill disposal area results in extensive overhaul. Total on the job is estimated at



job will be done at one end of project where the biggest cut is located requires that virtually all fill must be hauled one way.

GRAVITY dumps the load...in

ONE second



Koehring Dumptor® *has no body hoist*

Operator drives up, trips the body-release lever — and *gravity* tilts the 6-yard body 70 degrees. One second later the load is out, and Dumptor is on its way back for the next load. It's as simple and fast as that!

There's no 15 to 25-second wait for slow-acting body hoists — no expensive hoist replacement parts, maintenance or down-time. And, you get the same one-second dumping *every time,* under heaviest loads, in all temperature extremes, because Koehring *gravity-dump* never balks — never wears out.

One-second dumping earns a substantial increase in yardage output, too. For example — take a typical 1,000-foot haul where you would normally make 16 trips an hour. By saving an average of 20 seconds dump-time on each trip, Dumptor gains 320 seconds, or 5.3 minutes more productive haul-time per hour. You get 17½ trips, instead of 16. This, alone, adds 9% to hourly production.

This saving is typical of Koehring Dumptor's basic principle — to reduce all non-productive time to a minimum — to increase work-time for more yards per day. See Koehring distributor for complete information.

KOEHRING COMPANY

MILWAUKEE
16
WISCONSIN

K640

Subsidiaries:
JOHNSON
PARSONS
KWIK-MIX

Saves 20 seconds every time it dumps — Heaviest loads are dumped instantly. Tilting Dumptor body rolls on heavy-duty rockers. Snub chains attached to big shock absorbers check the body at approximately 70-degree tilt.

Shuttles back and forth without turning — Dumptor operates with equal ease in either direction. Constant-mesh transmission gives the same 3 travel speeds forward and reverse. Every turn eliminated cuts 15 seconds off cycle time.

64 square-foot loading target — Big, square body opening permits loading over either end or sides. Top edge and bottom are box-beam constructed. Sides, ends, heavily rib-reinforced. ½"-thick kick-out pan bolts to floor for rock work.

TANDEM SCRAPERS ARE INNOVATION on earthmoving work. Attached to standard 18-cu-yd rubber-tired unit is a 22-cu-yd scraper. Because haul is all downgrade, one tractor can haul the 40 cu yd, but a pusher is useful in loading.

RIPPER ON POWERFUL TRACTOR breaks up sandstone formation for removal by means of scrapers. Contractor plans

455,000,000 station yards (bid at 2 mills).

The project was designed for a minimum of waste material without exceeding a 3½% maximum grade. And for most of the 3-mi stretch the grade is only ½%. Thus the 9,000-ft haul from the big cut to the Union Oil Co. disposal area will always be down-grade and will always be ½% or more.

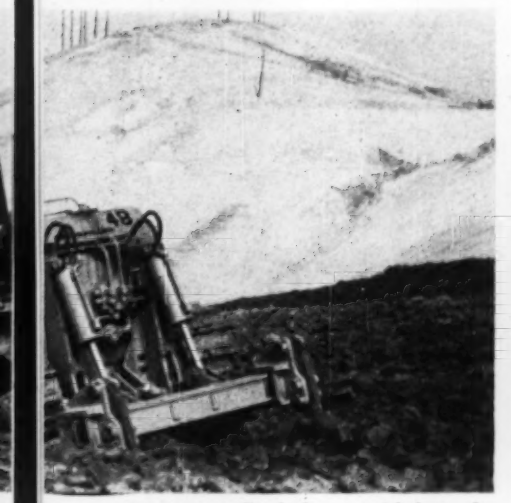
The huge quantities together with the long haul led directly to the tandem scraper innovation. Actually it is not a new idea. L. A. "Babe" Crow, sponsoring partner for the Ferry-Crow joint venture, had used such a scheme on a job almost 20 years ago. But that was with smaller scrapers than those of today. Until recently, tractor units powerful enough to haul two of today's big scrapers were not available. And even with more powerful tractors, pay haul must necessarily be downhill to handle two scrapers with a total of 40 cu yd of material. And long hauls by high-speed rubber-tired tractor units must be available to make the tandem scraper units pay out.

The tandem scrapers are formed by adding to a standard 18-cu-yd tractor-scraper unit a second scraper with 22-cu-yd capacity. To convert to tandem scraper operation, a second power takeoff was mounted on the front axle of the tractor. Thus the existing power takeoff on the rear axle operates the forward scraper, and the new power takeoff on the front axle operates the rear scraper. Cables from the front of the tractor are run over A-frames on the front and rear of the forward scraper to lead to the rear scraper.

Work this year on the project will be restricted to hauling from the big cut into a 4,350,000-cu-yd fill just adjacent to it. Meanwhile, the smaller 800,000-cu-yd cut in the middle of the

HARD ROCK IN SMALLER CUT is in part a shovel and truck operation. Next year tandem scrapers will haul from big cut through this cut to disposal area—a 9,000-ft haul.

FILL IS COMPACTED with aid of tank truck and 50-ton rubber-tired roller. This



to remove all of the material from the big cut through the use of rippers and scrapers.

EARLY EXCAVATION ON BIG CUT was handled by single scraper units. Double units were not brought into use until maximum grade was less than 14% to ease tractor's job or return haul.

job will be brought down to grade. Then, by next construction season, material will be hauled from the big cut to the Union Oil Co. disposal area.

The contractor is now using four of the tandem assemblies. Next year, according to present plans, at least eight will be on the job. And, if they are as successful as is presently indicated, even more units might be made up and used.

Length of haul from the big cut this season is only about 4,000 ft. This is being done partly by tandem scraper units and partly by singles. It's about borderline from an economic standpoint for the tandem units—except of course for the benefit gained in operating experience that will be repaid next year. The double units could not even be brought into use until the return grade for empty run was cut down to something like 14%. With a 4,000-ft haul and a 14% return grade, the tandem scrapers are operating on a 13-min cycle. That includes 1½ min for loading, the rest of the time is used for hauling, dumping and returning. On the haul portion of the cycle the units reach speeds of nearly 45 mph.

In filling the double scrapers, a pusher tractor is needed as in ordinary scraper work. The rear unit is loaded first to provide additional weight for loading the forward scraper unit. The contractor has found that in loading there is some danger of jackknifing the double units. This can to some extent be prevented by having the pan on the forward scraper unit lowered just as the rear unit is filled. The slight trough thus provided guides the wheels of the rear unit to help overcome the tendency of the units to jackknife.

All excavation and drainage work on the project is adequate for eight freeway lanes. But only six lanes will

combination of equipment develops 90% relative compaction.

MAJOR FILL is pierced by 96-in.-dia corrugated culvert. Flag marks settlement platform that, together with piezometer installations, will check 150-ft-high fill's progress.

ALLIED JET SEAL

the one joint seal that . .

RESISTS JET FUEL, HEAT AND BLAST

Allied JET SEAL will not be blown from the joints by the blast and heat of jet engines even after prolonged exposure. Nor is Allied JET SEAL affected by jet fuel, oil and solvents.

GIVES LONGER LASTING TROUBLE FREE ROAD SEALING

The extreme ruggedness of Allied JET SEAL combined with its superior qualities of adhesion, cohesion, resilience and ductility at low temperatures makes it the ultimate for highway sealing. Though the initial cost of Allied JET SEAL is slightly higher it is far more economical over the long run since its expectant life is more than 250% greater than presently used materials.

HAS NO VERTICAL OR OVERHEAD FLOW ON BRIDGES

Allied JET SEAL has no cold flow tendencies even at temperatures in excess of 300° F., thereby assuring that it will remain where placed. This advanced characteristic makes it possible to seal vertical and overhead bridge joints without loss of material due to gravity flow.

Allied Materials Corporation also manufactures regular joint sealing compounds meeting Federal Specifications SS-S-164 and SS-S-159. Write for additional information.

THE PERFECT SEAL WHEREVER CONCRETE SLABS ARE JOINED

ALLIED
MATERIALS CORP.

PRODUCERS, REFINERS AND COMPOUNDERS FOR OVER 25 YEARS

GENERAL OFFICES—
Braniff Bldg., Oklahoma City, Okla., Phone RE 9-0592
PLANTS—Stroud, Okla.; Detroit, Mich.; Los Angeles, Cal.; New Market, N.J.; Brantford, Ontario (Canada)

be paved now—probably paving won't start until late in 1957. This will include two 36-ft roadways plus paved shoulders and a 12-ft center strip.

Except for part of one cut where the slopes will be steeper, all cut slopes are 1 on 2. The slopes will be broken by 30-ft benches at 60 ft intervals.

Fill slopes are likewise 1 on 2 with similar benches. Some of the higher fills are protected with wider benches —up to 100 ft. All fills are made to 90% relative compaction. This is accomplished by liberal use of water and 50-ton rubber-tired rollers. Settlement of the high fills is being carefully watched by use of settlement platforms. And piezometer installations measure fill pore pressures.

Except for the huge cut and the tandem scraper operation, the job is more or less routine. There are only two major traffic interchanges on the job. One serves an existing road that can be closed during working hours. The other serves a county road yet to be built. There are also two undercrossings in the refinery area. There is a second county road to be handled over the highway but no interchange is needed.

Because the job is financed by bond money there is a relatively stiff $7,900 a day penalty if the job is delayed. This amount is equivalent to interest on the bonds. And the contractor is specifically warned in the specifications that overtime or two-shift operations will be necessary throughout the life of the contract. At present the Ferry-Crow organization is working two 8-hour shifts. Work is under way from 6 A.M. to 9:30 P.M.

To meet the 570-working-day time limit, roadway excavation must be substantially in excess of 25,000 cu yd a day. Excavation has to be completed early enough to permit the concrete paving work. The contractor figures on raising the daily production rate to at least 40,000 cu yd a day and perhaps to 50,000 cu yd on some days.

The Carquinez Bridge and its approaches is a project of the California Division of Highways, George T. McCoy, state highway engineer. Leonard C. Hollister is project engineer coordinating all the Carquinez contracts financed by the bond issue. Construction of the approach freeway is a project of District IV, B. W. Booker, district engineer, V. O. Smith represents the District's construction department on the approach freeway and Charles P. Sweet, Jr. is resident engineer.

For the Ferry-Crow joint venture, L. A. "Babe" Crow is sponsoring partner. R. C. Philbert is project superintendent.

Here's how Liberty Mutual can help you on your highway contract bid

If you are planning to bid on a highway contract, Liberty Mutual specialists will provide you with a detailed estimate of your insurance costs with no obligation on your part whatsoever.

Liberty Mutual underwriters and engineers will work with you . . . analyze the problems you will face in the proposed job . . . help to make sure your bid contains a realistic estimate of your insurance costs. These men know the road building business, for Liberty insures hundreds of highway contractors across the country. Liberty Mutual has insured contractors on almost every major superhighway built in the United States in recent years.

If you would like Liberty Mutual to help you prepare an insurance estimate for your bid on a highway contract, write Mr. Parker M. Morrell, Liberty Mutual Insurance Company, Boston 16, Massachusetts.

For twenty straight years . . . the nation's largest writer of Workmen's Compensation Insurance.

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Liberty Mutual Insurance Company • Liberty Mutual Fire Insurance Company • Home Office: Boston

There's EXTRA Performance in EVERY ATTACHMENT

with AUSTIN-WESTERN All-Wheel Drive and All-Wheel Steer

V-Plow With All-Wheel Drive, there is plenty of power and traction for opening rounds—and especially important when thick crusts have formed on old snow.

Snow Wing Rear Steer makes it easy to maneuver around highway signs, or other obstructions; is also used to resist the side thrust of a heavy load on the wing.

Bulldozer All-Wheel Steer provides exceptional maneuverability under all conditions, and is also used to angle the blade on work like this, to shed the material sideways.

Roller Another attachment which often takes the place of a costly, single-purpose roller. It has many uses . . . on many materials, including gravel, blacktop and soil cement.

Plainsman Used for building new roads, widening old roads or raising grade elevations, this elevating grader can be attached or detached in a matter of minutes.

Scarifier Most popular of all attachments. All teeth are used for light work; while every other tooth can be removed for deep scarifying of hard material.

All-Wheel Drive for maximum mobility and 30 percent more Power-at-the-Blade—power that is made still more effective by Torque Converter drive. All-Wheel Steer for extreme maneuverability. Put them together and you have teamwork that keeps Austin-Western Power Graders working where other graders fail. Austin-Western Works, Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Aurora, Illinois.

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New types of tests yield . . .

New Data on How Materials Behave

At the Pacific Area National Meeting of the American Society for Testing Materials, held in Los Angeles Sept. 16 to 21, researchers described test procedures and equipment under development that are providing new information on engineering materials. Here are a few of the highlights:

Advances in Soil Mechanics

Research shows how to get better foundations, how to find out what's underground, how to improve soil testing.

During construction of the first barrel of the San Diego Aqueduct, inspection revealed that it was difficult to form in the trench bottom a cradle that would provide complete bearing. And it was almost impossible to compact the backfill thoroughly in the wedge area under the pipe. As reported by W. G. Holtz, chief, Earth Laboratory Branch, Bureau of Reclamation, Denver, a research program was initiated to study methods and materials for pipe backfill. Laboratory tests led to these conclusions:

- Free-draining cohesionless sands and gravels provide the best materials for bedding purposes.
- Such materials can be jetted to provide a uniform bedding at the sides and under the pipe, but only moderate densities can be obtained.
- An excellent backfill can be secured by saturating and vibrating sands and sandy gravels.
- Vibration must be performed with a vibrator of sufficient size and of adequate length to provide strong vibrations in the area to be compacted.
- It is advantageous to place the backfill loose to the required bedding depth after pipe joints have been completed, since its weight helps consolidate it.

Designs for the second barrel required: (1) consolidated backfill in which select free-draining soils secured from required excavation or borrow were to be placed to at least 70% relative density by saturation and vibration methods, or (2) compacted backfill in which suitable silty or clayey soils were to be placed by tamping methods to at least 92% Proctor maximum density where suitable materials for consolidation were not available, on steep slopes, at paved road and railroad crossings, or for replacing overexcavation in trench bottoms.

Several contractors carried out this project. Differences in techniques they used for consolidating the bedding backfill were minor. In one case, vibrators were mounted on a jeep that traveled on top of the pipe, and were lowered and raised by a power unit. The backfill was saturated by ponding and then easily vibrated to the required 70% relative density. In other cases, the vibrators were mounted on tractors equipped with booms.

Experience on this and other projects, Holtz reported, has demonstrated that the consolidated backfill produces a bedding much superior to compacted backfill. And the cost usually is considerably less than for placing compacted backfill.

• **Compacting cohesive soil**—F. J. Converse, California Institute of Technology, Pasadena, presented test results that lead to formulation of basic rules for compaction of cohesive soils by low-frequency vibration or resonant tamping. Sand, he said, compacts under very low unit surface loads after resonant frequency is obtained. But this is not the case for cohesive material, since it is necessary to break the bond holding the particles together before it is possible for them to shift into a denser configuration. To assure sufficient compressive force for compaction of cohesive soil, he recommends:

- Operate at or near resonant frequency of the soil oscillator mass.
- Supply a dynamic force nearly equal to the dead weight of the oscillator.
- Have the moisture content equal to or slightly higher than the optimum for maximum density as determined in the laboratory.
- Provide sufficient dead weight to give a unit dead-weight bearing pressure on the order of 10 or 12 psi.

• **Underground surveying**—On another phase of soil investigation—subsurface exploration—Maurseth & Howe, consulting foundation engineers, Los Angeles, Calif., reported that they have found the electrical resistivity method for subsurface surveys 'a valuable tool, though the services of a competent engineering geologist are still mandatory. The electrical device works on the principle that soil and rock of different character offer varying resistances to the flow of an electrical current. The equipment can be used for economical determination of borrow-pit sources, ground water, soundness and faulting of rock formations and depth of bedrock.

• **New soil testing devices**—A machine for making soil tests more efficiently was described by John W. Maloney, manager of technical services, Dames & Moore, Los Angeles. Called a Universal Soil Testing Machine, it can be used to make many types of tests.

Key element in the machine is a fulcrummed beam that carries a power-driven moving weight. The beam is linked to a bar that loads the sample in accordance with the position of the weight. The sample can be raised or lowered with a power-driven screwjack. Automatic switches operated by the swing of the beam control the power mechanism that drives the moving weight or the jack, depending on the type of test.

The Bureau of Yards and Docks, on the other hand, has developed a testing machine for the specific purpose of making consolidated direct shear tests. L. A. Palmer, Philip P. Brown and C. M. Yeomans reported in a paper that the bureau, not happy with conventional soil tests, such as cylindrical compression tests—both triaxial and unconfined—now favors the direct box shear test for solution of stability problems encountered in waterfront areas.

The test procedure developed provides a means for making separate evaluations of shear characteristics—cohesion and angle of internal friction—of undisturbed soil samples. The frictional portion of shear strength is dependent on the presence of an effective normal pressure acting during shear. The cohesive portion is a permanent characteristic of the soil and is dependent on the pressure to which the soil has been consolidated. Slightly lower values are obtained for shear strength with this procedure than with conventional interpretation of consolidated shear tests.

The shear box used takes a cylindrical soil sample 1½ in. in diameter and at least ½ in. thick after consolidation and at the time of shear. The shearing load is applied through a proving ring, at a constant rate of strain, to the bottom half of the box, which rides on ball bearings.

(Continued on page 46)

Tests Evaluate Buildings

Construction weaknesses show up in tests of full-size buildings, enabling designs of future structures to be improved.

In response to requests by the military services for better prefabricated buildings, the Bureau of Yards and Docks set up a program for full-scale testing. Not only has the program enabled the bureau to evaluate structures, but the facilities set up at the U. S. Naval Civil Engineering Research and Evaluation Laboratory, Port Hueneme, Calif., has led to the development of an improved 20x48-ft, vertical-wall, gable-roof building, according to J. E. Dykins.

The laboratory employs assembly-line testing methods (ENR Jan. 3, 1952, p. 30). A building undergoes three phases of testing—packaging and erection, weathering and structural. It is erected on a cart and rolled on tracks from one test station to another.

In the weather tests, buildings are observed under a simulated natural rainfall of 2 in. per hour—from an overhead sprinkler system—and a 35-mph wind-driven rain—from a portable turbine spray duster with a perforated water pipe in the air-discharge throat. In the structural tests, loads are produced with hydraulic cylinders acting against an enclosing jig constructed from Navy pontoons.

A main feature of the building developed by the laboratory, Mr. Dykin said, is that framing members are fabricated from 18-ga box-shaped columns and roof beams.

• **Tests indicate best design**—The Corps of Engineers also has been carrying out full-size tests, which has led to development of a prefabricated building. The tests are being performed at the Engineer Research and Development Laboratories, Fort Belvoir, Va.

According to Raymond F. Bartelmes, of the Buildings Branch, the laboratory prefers sand-bag loading, because this loading can be made nearly uniform, can be easily checked and can be applied at low cost. Wind loads are simulated with static loading.

Since 1953, the laboratory has been developing a prefabricated building system composed of a number of interrelated buildings with a maximum number of interchangeable parts. Contracts were let for designs based on light-gage metal box sections, nestable Z sections and open-web steel joists for framing. Bartelmes said the box-section roof beams failed to pass the structural tests. The Z-section system passed, but bolt holes in web connections had to be reinforced. This design was eliminated because of its rather complex design and difficulty of erection.

The open-web joist system also passed the structural tests but had joint failures. This system was selected because it required the least design changes and was the simplest and most rugged of the three designs.

Bartelmes recommended, to save time in the future, that novel designs, particularly in light-gage metal, should first be tested structurally as a single bent or as three braced bents with bracing.

• **Wall tests**—D. B. Dorey and W. R. Schriever, Division of Building Research, National Research Council of Canada, Ottawa, reported that the DBR has started testing full-size houses. Initially, experiments are being made on a one-story wood-frame building to study the effect of omitting sheathing from the exterior walls.

R. F. Luxford and E. C. O. Erickson, of the Forest Products Laboratory, Madison, Wis., told of experiments to evaluate the rigidity and strength of houses built of plywood "stressed-cover" panels. These panels consist of an inner structural framework with a facing glued to each side to form, in effect, a box girder. In the tests, racking loads are applied to the walls of full-size houses by turning a nut on a rod connecting diagonally opposite corners of an outside wall.

Radiation Effects

Tests of irradiated structural materials yield information of value in the construction of facilities for the rapidly growing atomic-energy industry.

In structural materials exposed to neutron bombardment, collisions occur between neutrons and the materials' atoms, sometimes displacing them, and the displaced atoms may, in turn, displace additional atoms. As a result, the properties of the irradiated materials may change. These changes may persist even after the materials are removed from the source of radiation.

Louis S. Castleman, Sylvania Electric Products Co., Inc., Bayside, N. Y., summarized the results of a survey of unclassified literature that was made to determine the effects of neutron bombardment on the mechanical properties of structural materials. He found data on modulus of elasticity meager but estimates that changes in the elastic constant will be small. He observed also that major increases occur in yield strength and lesser ones in tensile strength in annealed metals irradiated at low temperatures. Changes in these properties are considerably less if the materials are initially in the cold-worked state or if the temperature is raised. Slight increases were noted in creep strength.

Castleman reported that potentially the most serious radiation damage uncovered to date is the tendency for embrittlement to occur in steels. This conclusion was confirmed by other speakers.

D. O. Leeser, Atomic Power Development Associates, Inc., Detroit, Mich., described radiation effects on welds and notches in plain carbon and stainless steels and in nonferrous alloys. He finds that austenitic stainless steels, 18-8 types, and certain nonferrous alloys, offer the advantage of higher initial ductility and lack of entirely brittle failures. Since transition temperatures are not defined for these materials, there is not as much concern for exposed components, such as reactor vessels, made of them as there is for those made of carbon steel.

O. Sisman and C. D. Bopp, Solid State Division, Oak Ridge National Laboratory, Oak Ridge, Tenn., observed two general classes of reactions in irradiated plastics. The reactions are called cleavage, or scission, and crosslinking.

The cleavage reaction breaks down long molecules or polymers into smaller fragments. The crosslinking reaction results in the binding together of the molecules of a polymer into a network structure such as is found in a gel. The effect of crosslinking is to impede viscous flow and increase the elastic modulus, whereas that of cleavage is to reduce the yield stress for viscous flow and perhaps also the elastic modulus. Some plastics appear to be more vulnerable to one reaction than the other.

The changes that occur in the mechanical properties of irradiated plastics and elastomers depend upon the rates of crosslinking and cleavage. Since crosslinking is the more probable reaction, the researchers said, we may assume that it always takes place, and that we will only see the effects of cleavage when the cleavage reaction goes fast enough to overshadow the crosslinking.

NYU "Cultural" Studies For Engineering Students

New York University this year will put new "culture" into its engineering curricula.

After two years of study, the chairman of the philosophy department in Arts and Science, has come up with six hours of courses over four years intended to give the engineering graduate "as adequate a grasp as possible of his Western heritage and a vivid sense of the increasingly important role of his profession in perpetuating and developing this invaluable legacy."

The engineering student will devote about 22% of his time (32 class hours through a four-year period) to the humanities and social sciences.

FOUNDATION of Long Sault Dam where 700,000 yards of concrete will be poured by the contractor—Walsh, Perini, Morrison, Kiewit, Utah Companies, Massena, New York.

AGGREGATE TUNNEL CUTS COST OF VOLUME CONCRETE MIXING... ST. LAWRENCE SEAWAY PROJECT

Material handling is a major problem on projects such as the Long Sault Dam on the new St. Lawrence Seaway. Here is a job of such magnitude as to require more than 2400 cubic yards of concrete per day to keep the work rolling.

To handle the necessary aggregates, the contractor constructed, at some distance from the dam site, a tunnel within which a conveyor carries the aggregate to a batch concrete mixer. This tunnel, built right on the job with Commercial Shearing and Stamping steel liner plates, is large enough to accommodate the conveyor belt and walkway for feeder operators.

Placed at intervals in the tunnel roof are openings through which the aggregate flows by gravity from the stockpile directly overhead and which completely covers the tunnel. Feeders installed at intervals in the tunnel roof control the gravity flow of the aggregate from above.

Feeder operators working inside the tunnel control the material flow and selection of sizes to obtain the proper aggregate mixture reaching the conveyor. The belt carries the aggregate to the batch mixer for the addition of cement, water and mixing into concrete.

Commercial Shearing and Stamping liner plate was selected for this job because of its ability to withstand the most severe overhead loads, and to provide maximum protection from collapse and cave-in. In addition, the ease of constructing and disassembling Commercial liner plate tunnels make it possible to move or salvage the entire tunnel. This method of large scale aggregate handling, as done at the Long Sault Dam project, is being profitably used by contractors on other major projects.

Commercial Shearing and Stamping steel liner plate is available in a wide size and gauge range. For complete details on how Commercial can help solve your surface or sub-surface tunnel problems write to Dept. E-40, The Commercial Shearing and Stamping Company, Youngstown, Ohio.

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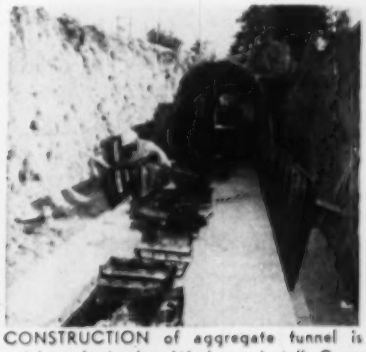


CONSTRUCTION of aggregate tunnel is quick and simple. Workmen install Commercial's liner plates on this concrete foundation in trench.

TUNNEL is completed. Unskilled workmen have used only 7 inside bolts to hold each plate. Note aggregate feeder openings.

AGGREGATE, stockpiled on top of tunnel, flows by gravity onto belt conveyor inside tunnel as operators open feeder gates.

CONVEYOR emerges from tunnel (foreground) and feeds aggregate into batch mixer for final processing into concrete. Trucks then haul concrete to dam site without time loss.

When bridge designs can be simplified...

Have better appearance... require less maintenance...

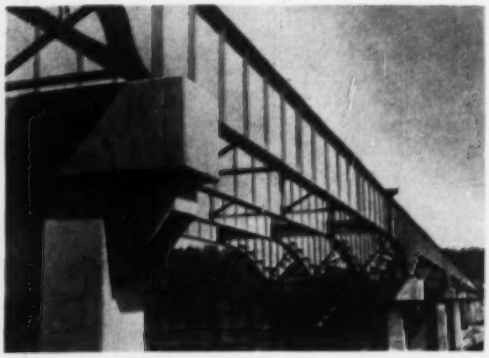
Yet cost less to build...

WHY

don't you design all bridges and buildings for welding

IN ARKANSAS

Plate girder bridge over the Spring River, Highway 62, at Hardy, Arkansas; 1078'-2" length with a 26 foot roadway.



IN TEXAS

Three level separation of State Highway 225 and 156 in Harris County, Texas. Completed in 1953. 145 tons of steel. Both structures are on curves and both are skewed.

Cost reductions of 15% to 20% realized in welded bridge design

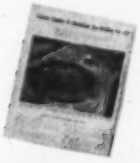
...with substantial savings in steel

THE accelerated trend to the use of welded steel design for highway bridges is evident from surveys of highway departments across the nation.

Savings in steel as well as cost of fabrication and erection are proving to average 15% to 20% over riveted designs.

Examples shown are typical of welded bridges reported in Texas, California, Kansas, Connecticut, Ohio, Florida, New York, Iowa, Arkansas, South Dakota and numerous other states.

"Studies in Structural Arc Welding" helpful to bridge designers are available by writing . .



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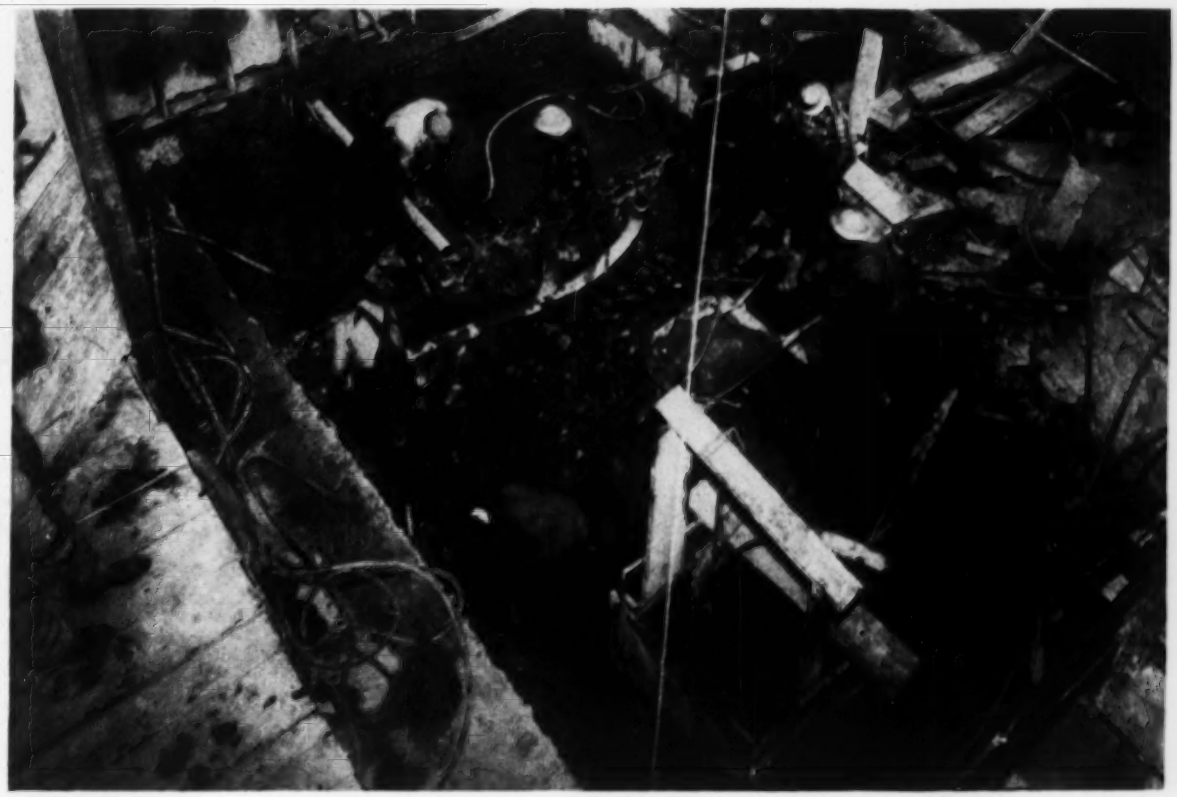

Pit excavation is done in wet fine sand, but without pumping, as . . .

Chemicals Dry Up Pump Pit Job

C. Martin Riedel
Chemical Soil Solidification Co.
Chicago, Ill.

Pit excavation in wet fine sand is being accomplished with a minimum of difficulty—after chemical soil solidification—as Chicago's Department of Water & Sewers modernizes its old pumping stations. As part of an $80-million program to improve water supply and pressures, one after another of the 50-mgd electrically driven centrifugal pumps at the South District's 68th Street Station near Lake Michigan, has to be replaced. At every pump, complete excavation of the old foundations, sinking of new shafts as tunnel connections and construction of new pump footings have been complex problems—further complicated by the soil conditions.

Fine sand, largely water-bearing, extends from ground level at El. 8 to El. 12. A stiff plastic clay extends from El. 12 to rock at −35.7. Pit excavation has had to go to El. 27, and it has been a most trying operation.

The City Construction Division chose to use chemical soil solidification, a method employed successfully years ago in the Chicago subway (Dearborn St. section) against a head of about 50 ft.

• **Tough drilling**—The solidification job at 68th Street Pumping Station was satisfactorily carried out within thirty working days, including drilling and injecting 92 injection holes, suitably spaced about 24 in. on centers. A majority of these holes had to be drilled through the old, uncharted brick masonry foundation and through an underlaying 3-ft-thick concrete mat of the original old steam-pump placed in 1890. To make the drilling particularly hard, this old concrete was reinforced by long 12x12-in. hardwood timber beams, latticed into the concrete. Without such obstructions, to be penetrated by the chemical injection pipes, the injection work would have been accomplished at a fraction of the actual working time.

In the process employed—based on the invention in 1925 of Hugo Joosten, Haarlem, Holland—two carefully balanced chemicals are consecutively pressure-injected into the loose soil to be treated permanently (no matter whether dry or wet): First the so-called Chem. I, a special "joostenized" silicate of soda solution, followed immediately by a strong calcium chloride solution. As both chemicals meet in the ground, a rapidly-forming silicic gel of high surface tension binds the loose sand particles together into an insoluble, sandstone-like mass of a hardness varying between 150 psi (about 11 tons per sq ft) and 900 psi (about 65 tons per sq ft), depending on the character of the loose material.

Properly solidified soil is watertight and withstands the attack of acids found in groundwater or of saltwater along the ocean shore. Hardness of the artificial sandstone increases with time. The bond to steel or iron is almost the same as that of concrete to steel. To obtain complete watertightness around the deep pit at this job, a 24-in. c-c spacing of the injection was selected, which also increased the structural strength of the treated area against the horizontal thrust of the hydraulic head, after excavation.

• **Rugged equipment**—The double-extra-

DRAFTING TRENDS

"Control" is the main factor in the trend to better prints. Nothing is left to chance in Post's exclusive controlled coating process.

Blueprints and diazo prints are getting better every year

In the 1890's, uniform, sharp reproductions were hard to get . . . and for good reason! Manufacturers of sensitized papers took ordinary paper stock and the best paint brush they could buy, then *painted on* emulsions! Color of developed blueprints often varied greatly from one end of the sheet to the other.

Through the years, better blueprint and diazo papers resulted from technological advances in three fields. In the *paper industry*, mills perfected higher quality stock to accept improved emulsions. Improvements in emulsion resulted, in turn, from production of purer *chemicals*. Then, to transform superior emulsion and stock into better sensitized paper, Post designed and built their own *controlled coating* machines. Each machine rigidly controls every phase of blueprint and diazo paper production for absolute uniformity from roll to roll.

"Control" opens new era

Back in the 1890's, paper stock was not uniform . . . coating patterns varied with the skill of the brusher . . . color was pure guesswork. During the past 60 years, production of blueprint and diazo paper left the age of chance and entered an era of scientific control.

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strong, injection pipes normally used in such work are less than 2 in. in diameter, fitted with points varying in shape and length for the different soils encountered in foundation work. Our own developments are the special driveheads and valve-heads on top of the pipes, to allow injection of the chemicals while the pipes are either being driven or withdrawn by hydraulic double-jacks capable of pulling even 100-ft-long pipes embedded in freshly solidified soil. Pumps used are of the double-acting piston type, of size and pressure to fit the job. Average pressure developed is between 80 and 150 psi.

• **Work progress**—At this job the preparation of the injection holes through the unpredictable area above the solidification area required more care and time than on many difficult jobs carried out before. However, the excavation work for the deep pit could start immediately after the last pipes were withdrawn from the solidified and watertight contract area around the proposed pit and its bottom. The excavation was carried down with free-standing, vertical sidewalls.

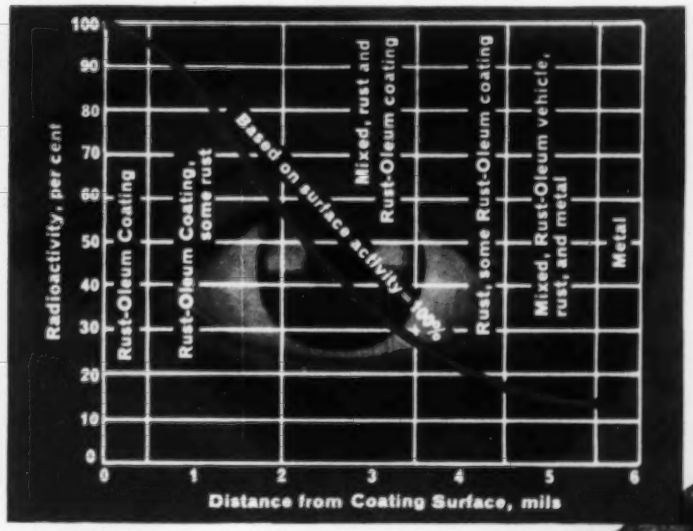
Afterward, lightweight sheetpiling was driven by hand-operated air hammers. This was done as an added safety precaution due to the steady vibration from existing pumps operating in the area.

No water trouble or running sand occurred while excavating and removing old concrete, masonry and the heavy hardwood timber lattice down to the clay and the final new elevation-bottom of the new foundation. Only a small, immaterial trickle appeared through old brickwork; origin of flow could not be traced. The little runoff could be handled easily by pumping in the morning before starting work.

• **Part of a big reconstruction program**—The extensive program for service improvement of Chicago's water supply is a cooperative effort of the department of Public Works, George L. DeMent, commissioner, and the Department of Water & Sewers, James W. Jardine, commissioner. Ernst Stromback, engineer of waterworks construction, with an excellent background of experience in tough tunneling and other construction problems, is in direct charge of the tunnel extensions and pumping station reconstruction work throughout the city. Phil H. Jordan is his resident engineer, on this pumping station work.

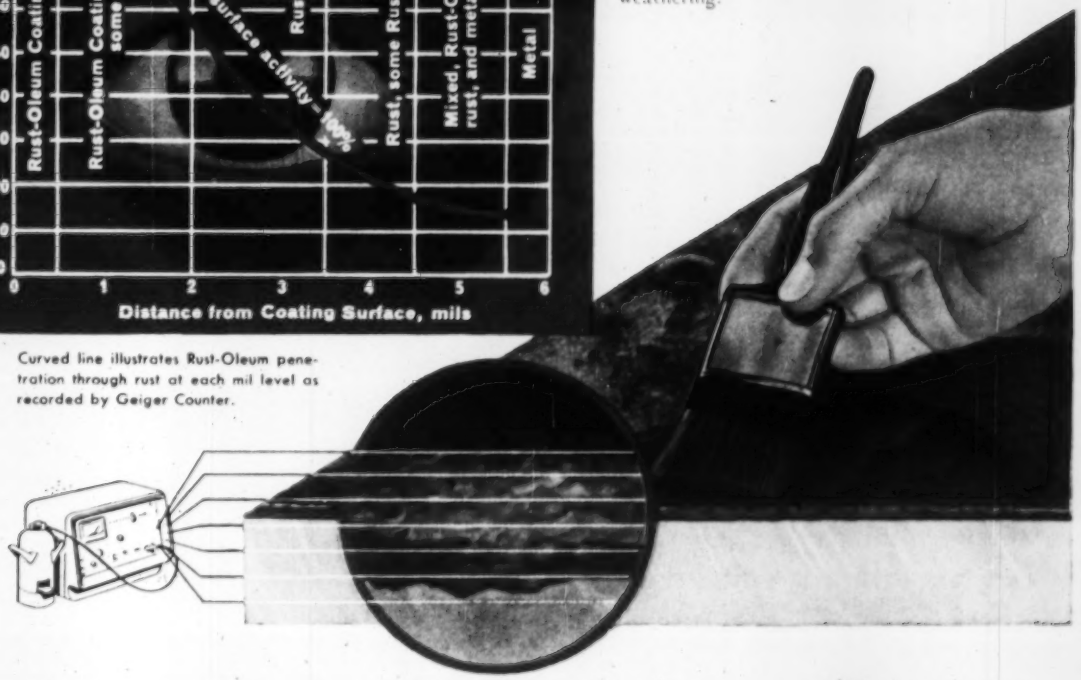
The design layout for the solidification work was made by the writer and his partner in the Chemical Soil Solidification Company, Lawrence Scully, who directed the field work with the company's superintendent, Leo G. Oler.

See Rust-Oleum *penetrate rust* to bare metal through the "Eyes" of Radioactivity!



Curved line illustrates Rust-Oleum penetration through rust at each mil level as recorded by Geiger Counter.

Rust-Oleum dries to a firm, decorative coating that resists salt water, sun, fumes, heat, humidity, and weathering.



Geiger Counter traces Rust-Oleum penetration to bare metal! In nearly three years of radioactive research, Rust-Oleum's *specially-processed* fish oil vehicle was radio-activated and formulated into Rust-Oleum 769 Damp-Proof Red Primer – then applied to rusted test panels. Rust-Oleum's specially-processed fish oil vehicle was then traced through the rust to bare metal by Geiger Counter.

This penetration means rust-stopping power, because the fish oil vehicle works its way into the tiny pits in the metal where it drives out air and moisture that cause rust. Important savings are yours, because Rust-Oleum can be applied directly over sound rusted surfaces – usually eliminating costly surface preparations. Attach coupon to your business letterhead for your copy of the thirty-page report entitled, "The Development of a Method To Determine The Degree of Penetration of a Rust-Oleum Fish-Oil-Based Coating Into Rust On Steel Specimens," prepared by Battelle Memorial Institute technologists. Prompt delivery of Rust-Oleum is assured from your nearby industrial distributor.

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Rust-Oleum is available in practically all colors, including aluminum and white. See our complete catalog in Sweets, or write for information.

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- ☐ Thirty-page report on Rust-Oleum penetration.
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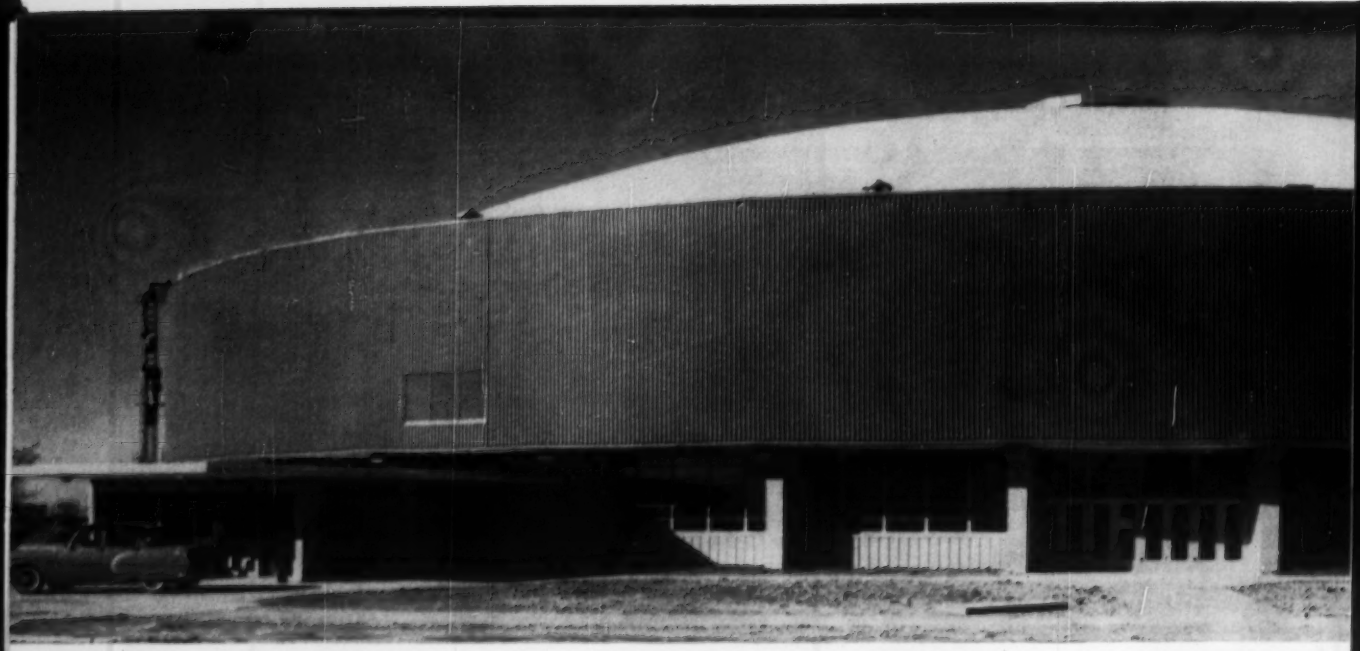
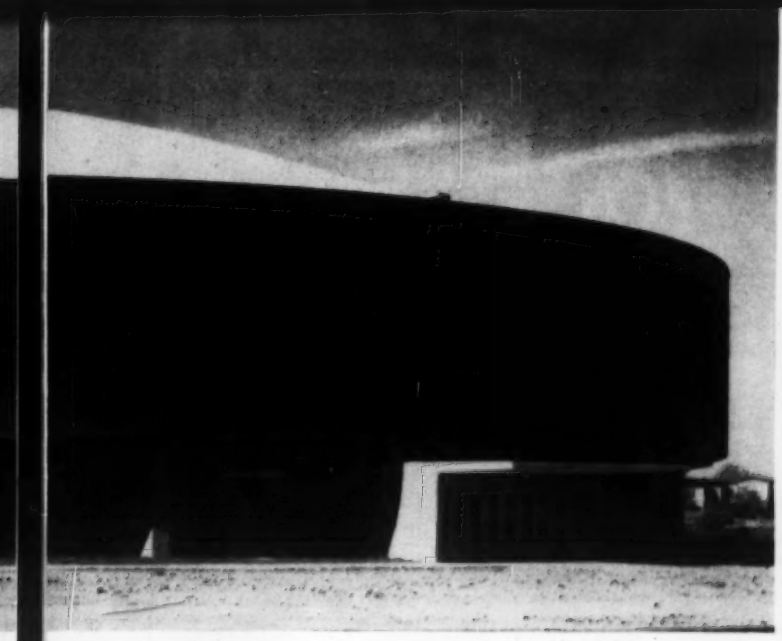
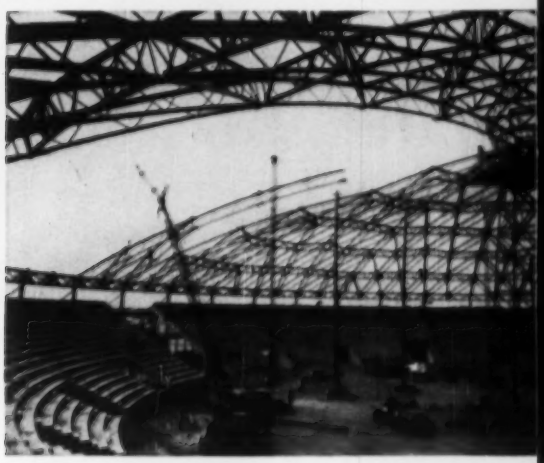


University of Wichita field house
features unique 267-foot diameter

THE ALL-WELDED, EXPOSED STRUCTURAL STEEL framework actually enhances the attractive interior of the building. The soffits of all trusses are painted a brilliant red which contrasts with the gray lead of the rest of the steel, emphasizing the diamond pattern.



UNIVERSITY OF WICHITA FIELD HOUSE. Architects: Lorentz, Schmidt, McVay, and Peddie, Wichita, Kansas. **Steel Fabricator:** Watkins Inc., Wichita. **General Contractor:** Dondlinger and Sons Construction Company, Wichita. **Designer and Engineer of Lamella Roof Structure:** Roof Structure Inc., Webster Grove, Missouri.



THE ROOF STRUCTURE is supported by 36 10WF39 columns. A trussed ring girder, 39 inches deep, rests on top of the columns and runs the entire perimeter of the building. Into this ring girder are framed 12 radial trusses which span to the compression ring at the apex of the roof. Also springing from the ring girder at intermediate points are curved roof trusses which intersect the radial trusses, resulting in the characteristic diamond-shaped lamella pattern.

lamella dome of Structural Steel

432 tons of steel erected in only 14 days

The unique lamella dome of Structural Steel which crowns the University of Wichita's new field house is the *first* such dome ever to be constructed. It was designed, developed and put to use for two practical reasons—economy and speed of erection.

Spanning 65,000 square feet, the 432 tons of Structural Steel were erected by two crews in the spectacular time of just 14 days! Starting on opposite sides of the building, the two crews worked around in one direction until closure was effected. The only falsework required was a central tower supporting the compression ring, or "lantern," at the apex of the dome. All connections were bolted during erection, then field-welded.

Built at a total cost of $1,405,700, the ultra-efficient structure includes such features as a complete heating and ventilating system (with radiant heating in the locker rooms), and color-corrected vapor lighting for the arena. And, with peripheral seating, not one of the 10,235 seats is more than 86 feet from the playing surface.

Where economy, speed of erection, and dramatic design are the keywords of construction, that's where you'll find versatile Structural Steel. Moneywise, Structural Steel is the most economical of load-carrying materials. And, it's the strongest. It will withstand more abuse than other structural materials, effectively resisting tension, torsion, compression and shear. Once enclosed in buildings, it lasts indefinitely, requiring no maintenance.

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UNITED STATES STEEL

Structural Steel may be riveted, bolted or welded, and may be erected in any weather. Since steel members are fabricated indoors, weather can have no effect on the quality of workmanship. Want more information? Return the attached coupon.

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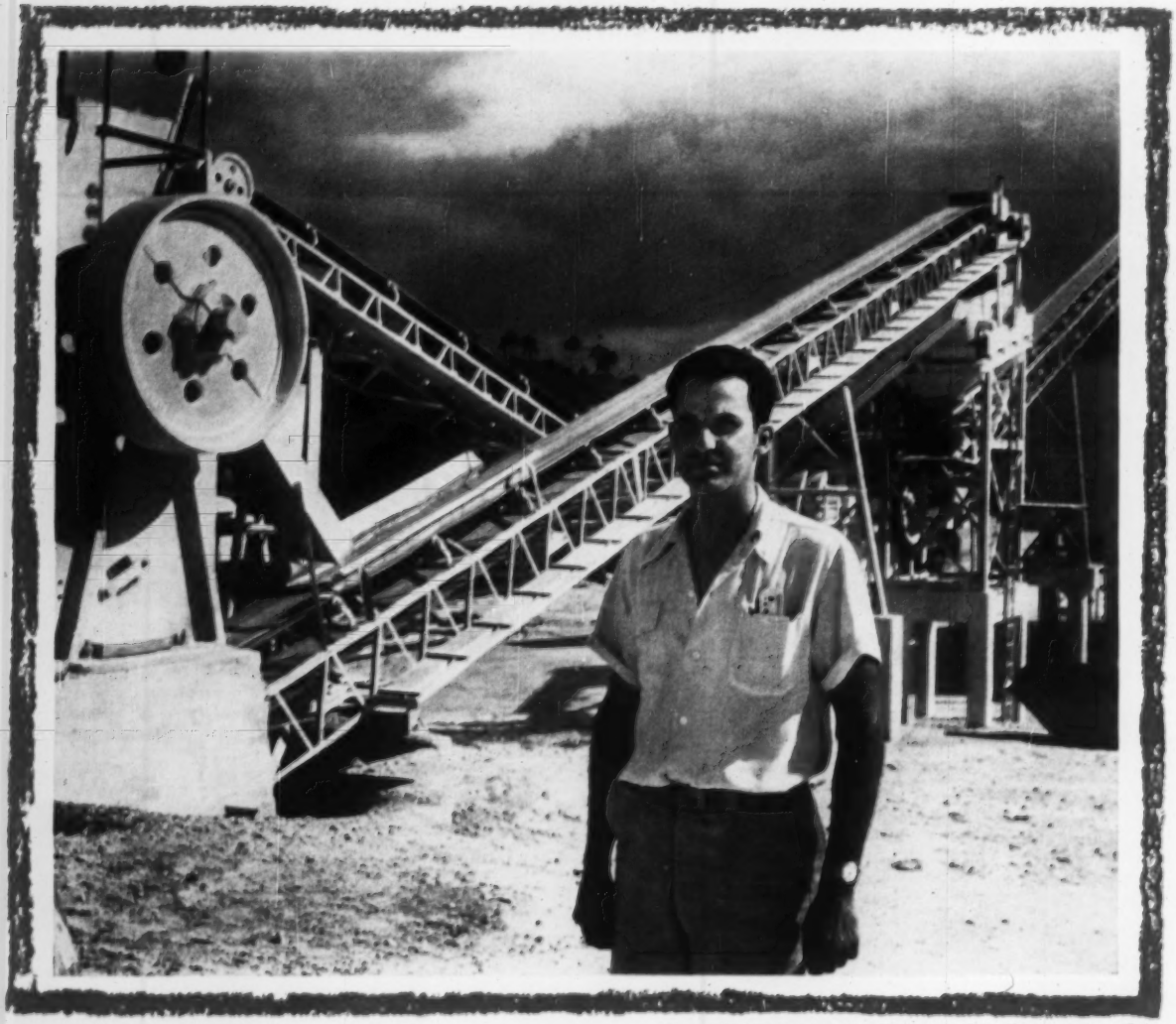

H. Amengual, engineer, Jamaica Rock Crushers, Inc., Cuba

"UNOBA...finest grease obtainable"

"Union Oil products protect our crusher against dust and climatic conditions which can be unbelievably bad here in Cuba.

"Sometimes our plant is deluged by tropical downpours...other times the dust gets so thick it looks like we'd had a snow storm. However, since we went into production over a year ago we've lubricated all bearings with UNOBA, and even during this rough 'shakedown' period we haven't lost a single one in the Rogers Iron Works crushers, conveyor rolls, shaker screens or anything else. In my opinion UNOBA is the finest grease obtainable for tropical operations like ours."

In spite of drenching rains and high temperatures UNOBA *stays in bearings to keep dust out*...it's truly a *multipurpose* grease. Immediately available from your nearby Union Oil representative.

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UP was the only direction offering the needed space, so . . .

Grandstand Tops a 5-Story Clubhouse

CANTILEVER FRAMES of reinforced concrete overhang adjacent property 26 ft. Space-gaining encroachment, 85 ft in the air, would not have been allowed lower down.

To support the roof canopy and upper deck of Copenhagen's new $1-million grandstand, 26 reinforced-concrete frames perch atop a 5-story clubhouse, looking very much like the open mouth of a bird.

Upper arms of the frames cantilever 70 ft, carrying a 2½-in. thin-shell concrete roof over more than half the 13,000 grandstand seats. The lower arms rest on two rows of clubhouse columns and support the top bank of seats. Lower decks slope downward from fifth and third-floor levels, and additional seating is provided in bleacher quadrants at either end of the grandstand.

Sharply limited as to grandstand depth by the 118-ft distance from playing-field boundary to building line, the designers had to gain space by adding height. The depth restriction eased somewhat at the height attained, however (the top tier of seats is 85 ft above the field), and the frames were allowed to overhang the building line 26 ft, encroaching on adjacent park property.

Length of the grandstand and clubhouse is 391 ft—twenty-three 17-ft bays. Expansion joints, with twin frames, occur near the third points.

Clubhouse construction is reinforced-concrete frame, designed to resist lateral loads by frame rigidity,

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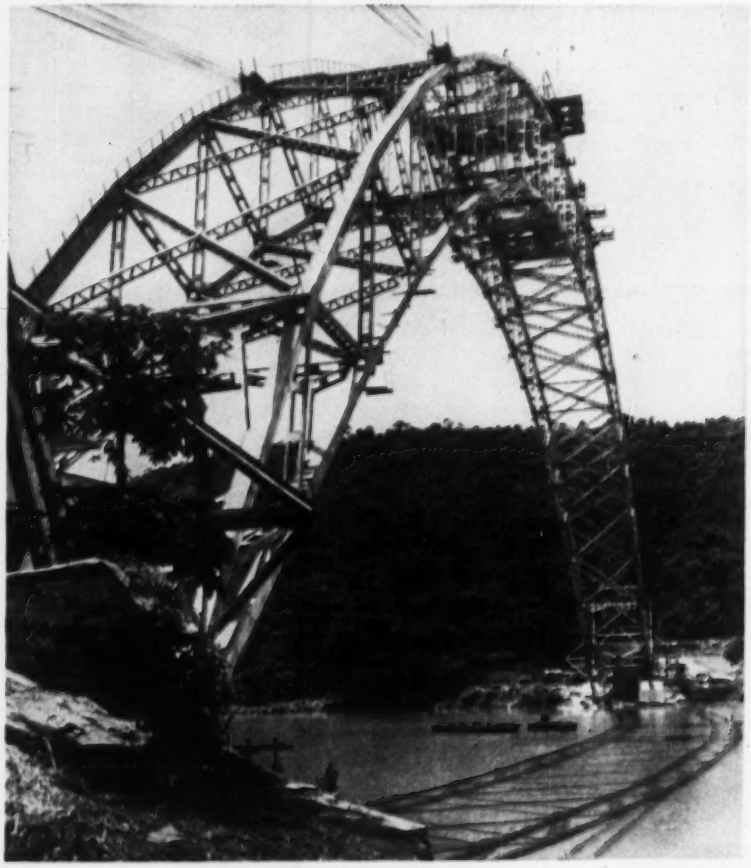
since end-to-end corridors at several levels made it impracticable to use transverse shear walls. Before the final design was completed, wind tests on an eight-bay model were carried out at the Technical University at Denmark.

The V-frames were cast in place in three stages, corresponding to the sections marked off by expansion joints. Trolley-mounted formwork long enough for one section was used three times. The concrete was placed by a crane that was equipped with a ½ cu yd bucket.

Frames and roof shells were not cast monolithically. Instead, the frames were cast first, with grooves along the sides at shell level and with splicing bars left protruding. Then the shell sections were cast, reinforced with 0.275-in. bars in an 8x8-in. mesh placed at mid depth.

For cast-in-place members (all struc-



Volta River Bridge Nears Completion

The midspan meeting last month of two 500-ton steel-arch segments ended a major phase in construction of the first bridge across the Gold Coast colony's Volta River. The segments jut from 200-ton concrete abutments on either bank and during construction were tied back by steel cables anchored in rock.

Two hours after jacks began letting off on the cables, the two halves closed a 10-in. gap 200 ft above the river and the 805-ft arch (ENR Aug. 16, p. 72) became self-supporting. Dorman, Long & Co., Ltd., the contractor, then started work on the deck structure. It will be suspended from the arch by cables. With approach roadways already completed, the bridge is expected to be opened for traffic before the end of this year.

Located at Adomi, 70 mi from the river mouth, the bridge will replace an overworked ferry that sometimes delays travelers as much as 24 hours on journeys between the Gold Coast and neighboring Togoland.

Consulting engineers on the project are two British firms, Sir William Halcrow & Partners and Freeman Fox & Partners.

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42 hp

Model 303 with angle dozer and back hoe. Hoe buckets available in 5 sizes — 12 to 36 in. Mounting or dismounting of any attachment takes only 5 to 15 minutes. Gas or diesel engines.

34 hp

Model 202 with grader makes an ideal utility and cleanup tool . . . frees big rigs for more profitable assignments. Features dual range 6-speed transmission . . . high speed reverse.

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Now from one source . . . a package of 5 versatile, low-cost tractors with 20 power-matching attachments

Measure your profit problem against the bright, new versatility of M-H-F Work Bulls. Never before so much pay-off workability at such low cost!

Tough manhandling projects become a breeze with a Work Bull—34 to 52 hp—digging, dozing, lifting, loading, hauling, mowing, handling scores of jobs on all projects.

And when the job is too small for a large machine, it's just right for a Work Bull. Attachments quick-change in 5 to 15 minutes with no special gear.

Maintenance costs little, too — Work Bulls are built to "construction standards" . . . always ready for rugged duty. And when you think of maintenance, remember this. You'll be dealing with a single retail distributor for sales and service on both tractors and attachments. One source, one responsibility — a definite advantage for you.

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FORK LIFT

Model 202 works on or off hard surface. With standard 10-ft mast, it handles loads to 4000 lbs. With optional triple mast extension, shown, it lifts lighter loads to 21 ft.

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Joint compressed in warm weather temperatures.

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For sealing keyed construction or contraction joints in vertical walls. Maintains bond with concrete at temperatures to sub-zero. Simple installation insures a moisture-tight seal of the joint.

Keyed construction joints in vertical walls and horizontal slabs.

Molded Para-Plastic sealing at a footing.

Para-Lateral Strip

Designed for sealing against seepage in vertical construction and contraction joints in foundation walls, retaining walls, tunnels, abutments, wing walls where back filling against one side of the structure is required.

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. . . International

tural framing), high-early-strength concrete was used. Precast steps were used as the grandstand decks. Hauled to the site as needed, they were erected directly from trucks.

Anticipating that the cantilever ends of the frames would drop 3 to 3½ in. elastically on removal of the falsework, the designers called for 10 in. of superelevation at the tips, this amount being intended also to compensate for creep deformation. The observed elastic deflections were 6 to 7 in.—twice as much as expected—and they also differed from section to section but not enough to cause concern.

Christiani & Nielsen, Ltd., designed and built the grandstand, consulting on the design with Gunnar Krohn and Hartvig Rasmussen, architects, and A. J. Moe, civil engineer.

Rubble Dam

Indian board picks rubble, local labor for big dam

Sacrificing two years construction time for economic advantages, India's Nagarjuna Sagar Control Board has decided to build the dam of a $157.5-million multi-purpose project of mortared rubble masonry. By its decision, the board—which consists of the Indian Government's Central Water & Power Commission and members of the two beneficiary states, Andhra and Hyderabad—overruled the recom nendation of U. S. dambuilder Harvey Slocum (ENR, Feb. 9, p. 26), superintendent of the Bhakra-Nangal project, who favored an all-concrete structure.

In backing construction of a concrete dam, Slocum proposed complete mechanization, with the import of 1,200 skilled workers from the U. S. and promised completion within eight years. While the construction of a rubble masonry structure, using methods not so modern, would take longer, the board saw in it a chance to reduce costs by $10 million, put less of a pinch on already-short cement supplies and more important, provide steady employment over a ten-year period for 37,000 local masons.

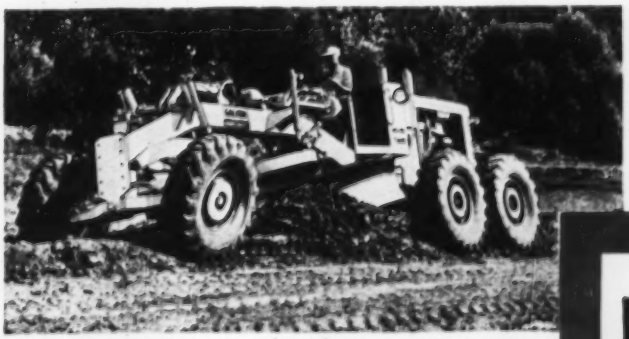
In the construction scheme now planned, cement mortar with a 1:4 ratio will serve as the binding agent where principal compressive stress does not exceed 15 tons per sq ft. On the dam's upstream face, a richer mixture—about 1:3 to insure water-tightness—will be applied even though the stress be less than 15 tons per sq ft. Where stress is between 15 and 20 tons per sq ft, rubble masonry with a 1:3 mortar will be employed; stresses over 20 tons will

3 more contractors get profitable performance from

International-Powered motor graders

Arizona owner uses Model 118 Galion Motor Grader to construct irrigation ditches. Grader is dependably powered for low-cost operation, long life with International UD-525 diesel engine.

Paving contractor in Pennsylvania backfills bridge abutment with Austin-Western 99-H four-wheel drive grader driven by an International UD-14A Diesel.



Ohio contractor cuts ditches on a new highway with Model T-600 Galion Grade-O-Matic Grader equipped with International 140D diesel engine.

Here are three more contractors who have proven the long life, dependability, and profit-making performance of International-powered motor graders. Altogether nearly 50,000 International engines have powered motor graders, alone. It's proof that International power units give contractors the profitable kind of power they need and want.

Some of the many reasons for this in IH diesels are: exclusive injection and combustion systems for clear exhaust, full measure of power...over 15 to 1 compression ratio with full working expansion of hot gases behind the pistons, better fuel economy...heavy, counter-balanced crankshaft or vibration-dampeners for smooth operation (new gear-driven balancers on UD-350 and UD-14A)...and exclusive IH in-built gasoline conversion starting system which turns the engine 3 times faster than ordinary systems for fast, easy diesel starts in any weather.

It follows, that if so many contractors choose International engines for new equipment...they must be good for replacement, too. See the complete line of International diesel and carbureted engines at your International Power Unit Distributor or Dealer, soon.

CHOOSE FROM 17 HEAVY-DUTY INTERNATIONAL DIESEL AND CARBURETED ENGINES—FROM 17 TO 214 HP.

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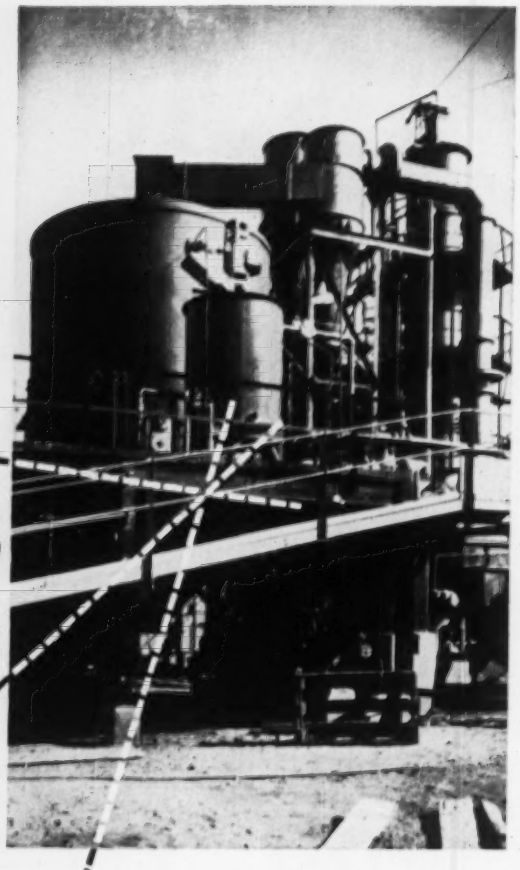
A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors... Self-Propelled Scrapers and Bottom-Dumps... Tractors and Rubber-Tired Loaders... Off-Highway Trucks... Diesel and Carbureted Engines... Motor Trucks.



IN SOUTH AFRICA

AROUND THE CLOCK

A TANK CAR AN HOUR OF H_2SO_4

This FluoSolids System at West Rand Consolidated Gold Mines, Ltd. on South Africa's fabulous Witwatersrand was started up early in 1952. The first of several to go into operation on the Rand, it was also the first in the world to combine FluoSolids roasting of pyrite with a contact acid plant.

Over 1650 tons of H_2SO_4 — enough to fill twenty-four tank cars — are being produced every day for uranium leaching at seven South African mills.

An important part of each of these installations is a Dorrco FluoSolids System. Cumulatively the Systems include nineteen Reactors, of which sixteen were on original order and three on repeat orders, plus additional Dorr-Oliver and auxiliary equipment to produce a high strength SO_2 gas for acid manufacture by conventional contact acid plants.

Total feed to the Systems is 1450 tons per day of pyritic gold mill tailings — averaging 35 to 45% total sulfur, gas production is 75,000 to 82,000 SCFM. Gas strength averages 12 to 13% SO_2 . . . sulfur recovery approximately 90%.

The efficiency and economics of the Dorrco FluoSolids System is in evidence in these facts. Additional representative proof that the FluoSolids process can produce an SO_2 gas at lower investment and operating costs than other roasters.

If there's a step in your flowsheet where intimate contact between solids and gases is essential, fluidization should be investigated. Just drop a line to Dorr-Oliver Incorporated, Stamford, Connecticut.

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require the use of monolithic concrete construction to insure adequate safety factor.

The design staff of the Central Water & Power Commission has yet to establish the thickness of the high abrasion concrete to be placed on the face of the dam's spillway. Mechanical equipment will be used for batching, mixing and transporting the concrete, which will contain an air-entraining agent to reduce water content.

The overall Nagarjuna Sagar picture —involving 410 miles of canals and powerhouse works—will have an estimated ultimate completion cost of $244 million. When finished, about 1965, its 9.3-million-acre-ft reservoir will help irrigate 3.2 million arid acres.

Venezuela to "Freeze" Lands For Giant Irrigation Project

Venezuela plans a giant irrigation project to water 740,000 acres of land on the plains of the southwest state of Barinas, President Marcos Perez Jimenez recently announced.

Dams on the Bocono and Maparro rivers will store 2.5 million acre-ft of water and provide 50,000 kw of power. A decree "freezing" lands covered by the project will be issued in the near future as a preliminary step in the program. No cost estimate has been given.

Venezuela is now spending $75 million on a similar project, the Guarico Dam, which will irrigate 270,000 acres (ENR Sept. 27, p. 51).

Several other irrigation systems are on the boards. A $9-million dam at Agua Viva in the western state of Trujillo will water 125,000 acres. Irrigation and flood control dams on the Palmar and Apon rivers will irrigate 125,000 acres west of Lake Maracaibo.

International Roads Group Awards Foreign Scholarships

Forty-two engineers from 28 countries will study highway engineering during the school year 1956-57 under sponsorship of the International Road Federation.

Except for two who will study at Durham University England, all will attend graduate school at Purdue, Ohio State, Yale or Northwestern.

In addition to representatives from Europe, Canada, Mexico and South America, the group comprises highway officials from such places as Korea, Indonesia, Japan, Australia, Philippines, Egypt, Iraq and South Africa.

The Federation's fellowship program, started in 1949, now has trained engineers from 44 countries.

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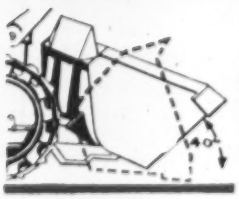

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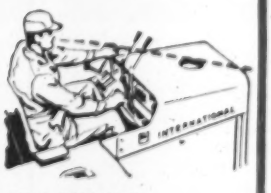
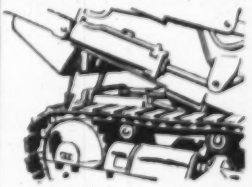
Forward	0-1.6	0-4.5	0-10.1
Reverse	0-2.1	0-5.7	0-13.1

NEW HIGH SPEEDS
The Payloader's top speed of 10 mph forward is nearly three times faster than most other competitive units. Top reverse speed of 13 mph is four times faster.



NEW VISIBILITY
Operator is always "on top of his work" because of rear-engine design. He works faster with less effort. To shift or steer, he pulls a hydraulic lever. There is no master clutch or steering pedals.

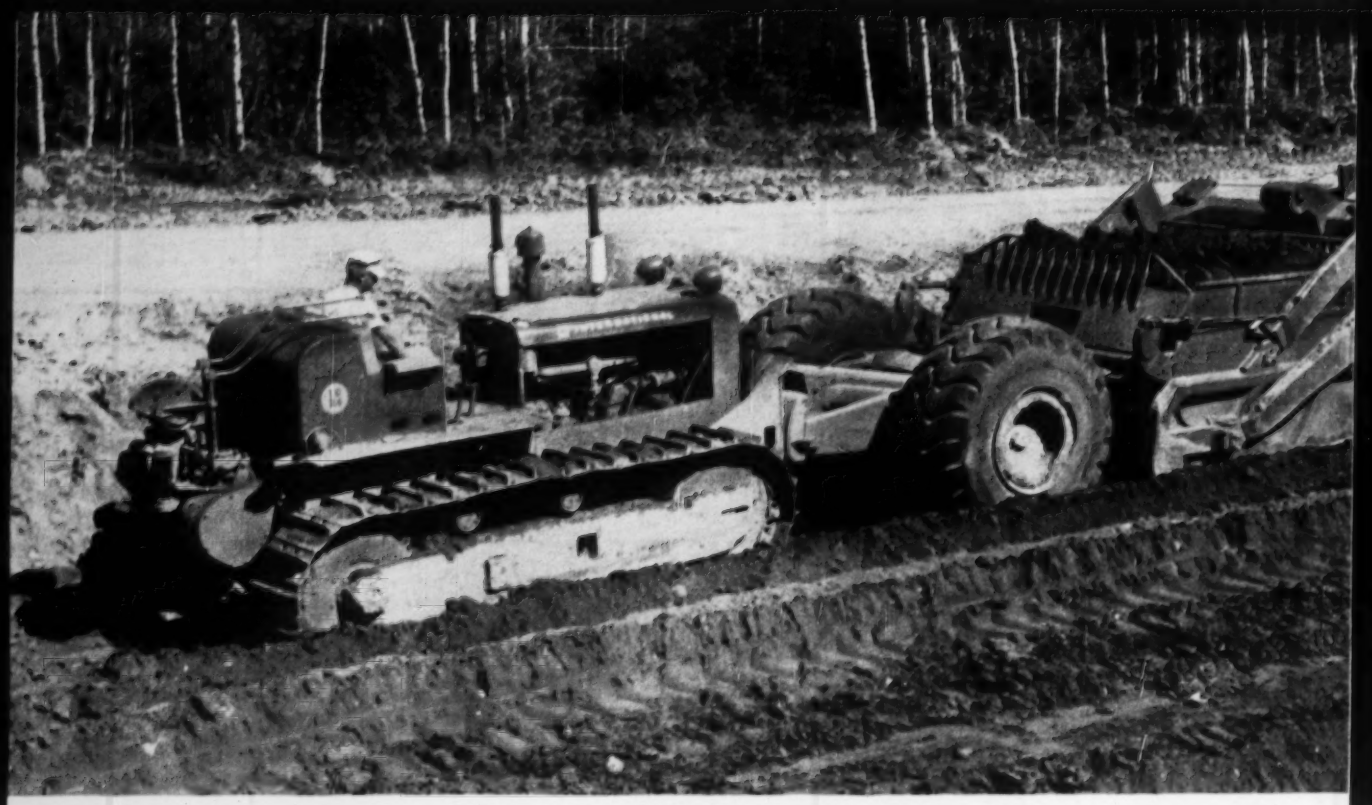


NEW SERVICIBILITY
Only tractor-shovel with tilting body, the Payloader permits mechanic to get at all four sides of engine easily and quickly. Tilting body for servicing takes only a few minutes.

Here's the new tractor-shovel that surpasses all competitive models for speed...gives you fastest loading cycles ...yet offers you crawler traction and stability for greater production and more profitable work in any terrain...in any weather. It's the all new, rear-engine, 1¾-yard International Model 12 Payloader...with new, high speeds, unmatched in crawler history...with new pry-out force necessary in rock and other tough materials...with new visibility, a result of rear-engine design...and new serviceability obtained by tilting the body to reveal engine and other components. See all these and many other International Payloader features at your International Construction Equipment Distributor, soon. Then try it! It's so fast...you'll think it's on wheels.

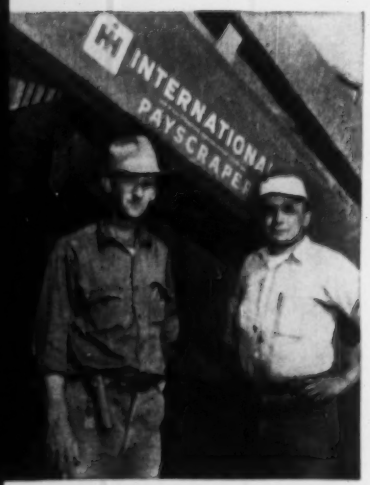
INTERNATIONAL® CONSTRUCTION EQUIPMENT

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks.



"Years of lowest downtime"

back preference for schedule-beating International® Equipment . .



Foreman Milton D. Peterson and Supt. H. L. Radandt beside one of Radandt's new Payscrapers.

It's a $394,000 relocation and regrading job of Wisconsin 27, between Ojibwa and Ladysmith—involving clearing, grading, culverts, and sand gravel fill up to base course. Approximately ½ million cu. yds. of excavation and borrow to do.

Cuts as deep as 21 feet are required—and one 32-foot fill is necessary, because of a 22-foot deep marsh excavation, to base new road on firm footing.

A 12-unit International prime mover fleet—pushers, dozers, rubber-tired Payscrapers®, and crawler-scraper team—is what Contractor H. F. Radandt, Inc., banks on to "wind 'er up," ahead of the Wisconsin winter, with a profit!

"Have been using International crawlers since 1946," states Supt. H. L. Radandt, for the contracting firm. "Presently we have nine International crawlers and three Payscrapers in the fleet. Years of actual operation have proven International equipment had given us good service with lowest downtime. We do all our own repair work, and International design is simple to work on."

Prove how exclusive Planet Power steering with full-time live power on both tracks, plus finger-tip operating ease, give the International TD-24 exclusive production-boosting advantages! Compare capacity of new bonus-powered International equipment to anything else on tracks or wheels. Find out what International unit assembly construction means for overhaul speed and simplicity—for reduced downtime—for new upkeep economy. See your nearby International Construction Equipment Distributor for a demonstration!

"**The new design 75 Payscraper** bowl loads and unloads, fast and easy," declares Supt. Radandt. "Estimated average load: 18 pay yards." Here, loading time with TD-24 as pusher, the 75 heap-loads in 45-60 seconds, in silt-sand-gravel mixture!

—by H. F. Radandt, Inc.,

Eau Claire, Wisconsin

See you at
the ROAD SHOW—CHICAGO
Jan. 27 to Feb. 4, 1957

Dumping of the new 75 Payscraper takes only 10 seconds. Higher apron lift, and bigger apron opening assure new dumping speed and positive clean-out ability. The new Payscraper's high horsepower - to - capacity ratio permits rapid acceleration to 24 mph top speed — a big yardage-booster!

The three Payscrapers in the Radandt fleet average 2200 cu. yds. per 10 hours—on a 6300 lineal-foot round trip. "The new '75' has matched engine power to deliver the payload fast, and flotation to take roughest pit or haul-road conditions," adds Mr. Radandt.

This torque-converter TD-24 is one of three International crawlers towing scrapers on the job—hauling up to 1000 lineal feet one way. With 200 net engine hp and full-time traction power on both tracks with Planet Power steering, this outfit hauls fill dirt into one of the 22-ft. deep cuts.

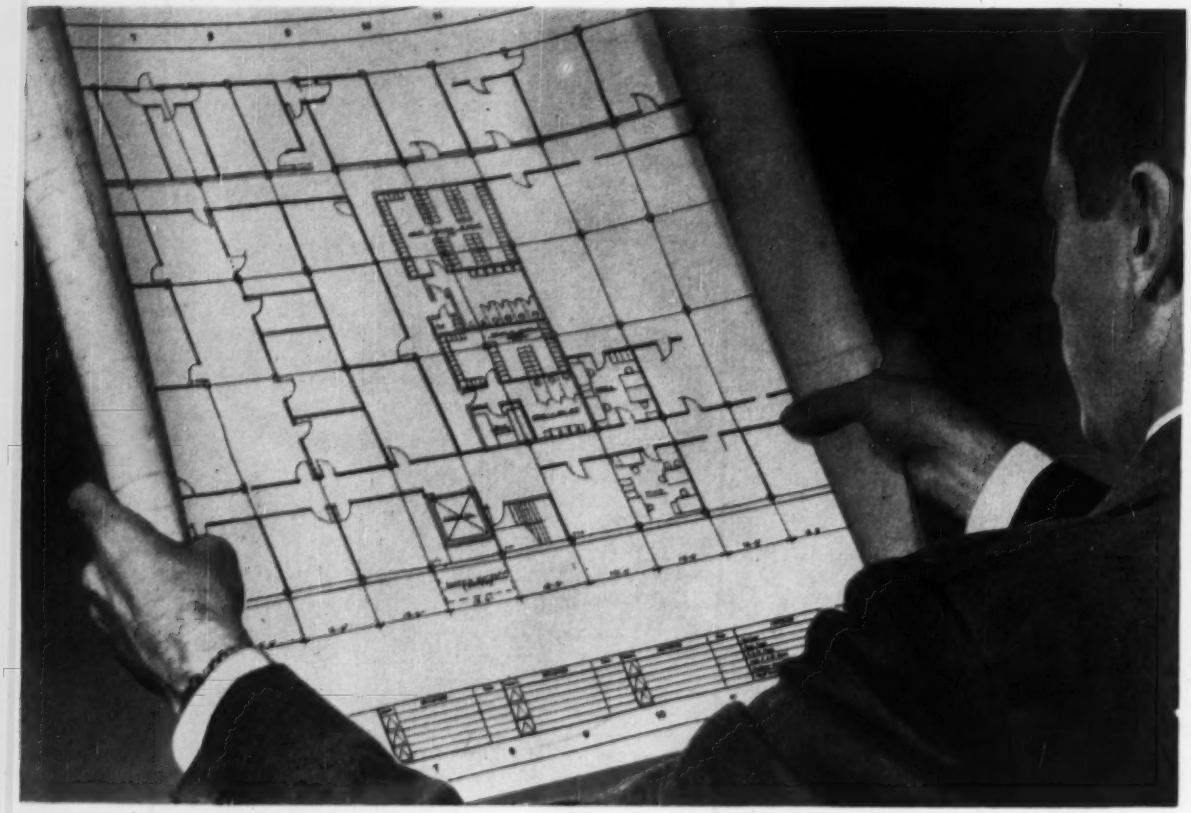
Another TD-24—a veteran in the Radandt fleet—spreads and compacts fill dirt on one of the marsh-excavated spots. TD-24 Planet Power steering is particularly productive on all blade work. Full-time live power on both tracks results in faster cycles, bigger loads.

INTERNATIONAL® Construction Equipment

INTERNATIONAL HARVESTER

International Harvester Company, 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Beam Tractors . . . Self-Propelled Scrapers and Bottom Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks



Kodagraph Autopositive intermediates have dense black photographic lines on a translucent paper base.

To show alternate floor plans and elevations

Instead of retracing basic plans over and over, you reproduce them on Kodagraph Autopositive Paper.

This revolutionary paper gives you positive photographic intermediates *without a negative step.*

You, or your blueprinter, can turn them out under full roomlight with present equipment. Expose in a blueprint or direct-process machine . . . or vacuum frame; process in standard photographic solutions.

Result: Sparkling intermediates made at a fraction of the retracing cost! Just add the new design . . . and you have printmaking masters which will give you top-quality blueprints and direct-process prints.

This is another example of the way Kodagraph Reproduction Materials save time, cut costs in thousands of drafting rooms and reproduction departments.

EASTMAN KODAK COMPANY
Graphic Reproduction Division, Rochester 4, N. Y.

New booklet is jam-packed with valuable tips on saving drafting time, protecting drawings, getting better prints.

Kodagraph Reproduction Materials

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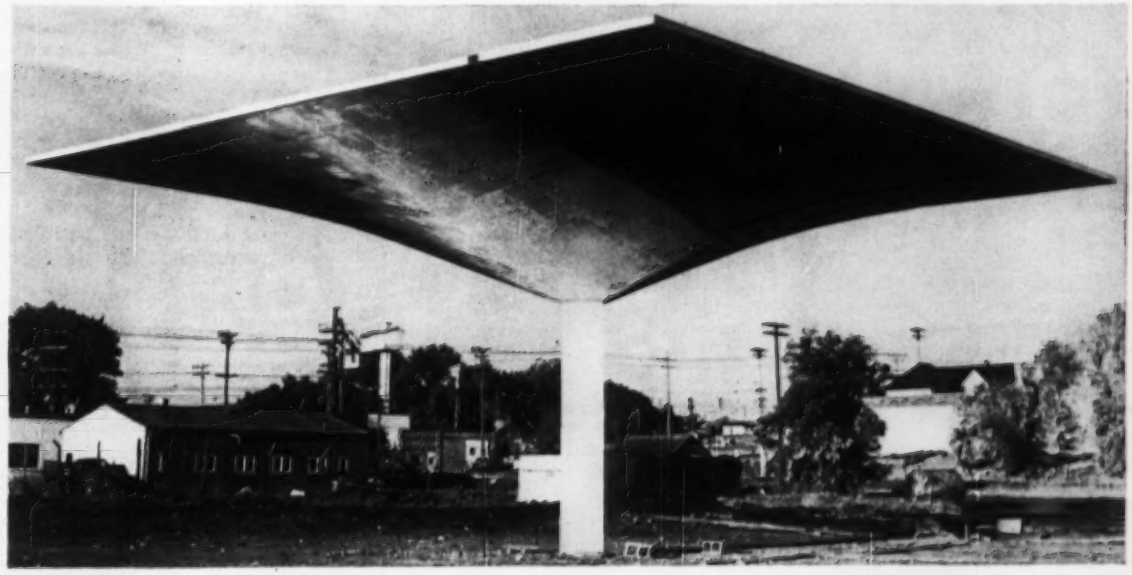
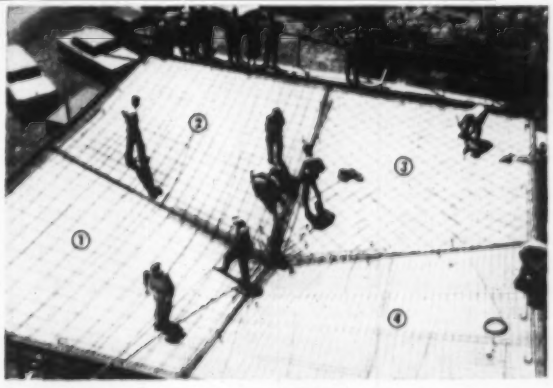
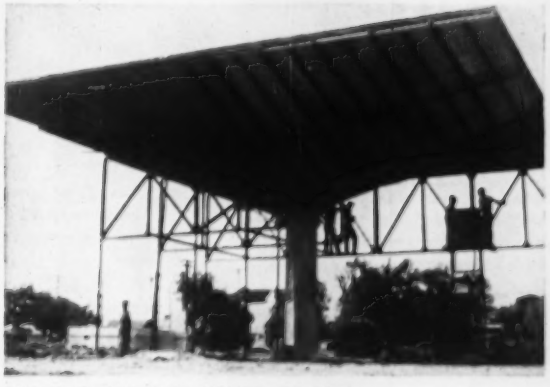


TEST HYPERBOLIC-PARABOLOID SHELL, 40 x 40 ft, is supported on 2-ft-sq column.



FOUR REINFORCING SCHEMES were tried—¾-in. rods 16 in. c-c (1); ¾-in. rods 12 in. c-c (2); ¾-in. rods laid diagonally 12 in. c-c (3); 6x6 by no. 4 mesh (4).



FOUR SIZES OF FORM PANEL were tested—one on each quarter of the test roof. The warped shell is formed with straight panels despite the double curvature.

Pilot Project Probes Paraboloid

The hyperbolic-paraboloidal roof shape, which has been built in metal and thin-shell concrete in Europe, Latin America—and in a few instances, in the U.S.—has successfully passed tests conducted by A. A. & E. B. Jones Construction Co., Denver, Colo. The firm built a 40x40-ft section in thin-shell concrete for the purpose of testing different methods of forming and reinforcing. The Jones Co. will manufacture the selected form system for Great Southwest Corp., Dallas, Texas, for a 5,000 acre industrial district.

The test section in its entirety does not have the familiar saddle shape of a hyperbolic paraboloid. Instead, its configuration is that of portions of such a surface, rearranged so that all four edges of the roof lie in the same horizontal plane. This feature will facilitate the joining of a number of the sections in multi-bay buildings.

There are certain inherent advantages in the hyperbolic-paraboloid shell. It is highly efficient at carrying loads, thus saving on concrete and reinforcing. It is also lightweight. Some of the roofs built abroad of this type have been only 1-in. thick, although Jones Construction Co. will use a 3-in. slab. An important advantage is that the warped-shaped surface can be formed with straight forms, since a section taken parallel to its edges will yield a straight-line profile. Relatively long column spacings are also achieved.

Jones' forming system was developed in 1953 for concrete slabs. The form panels are plywood on aluminum frames. Panels are fastened together with pins, with all the fastenings at-

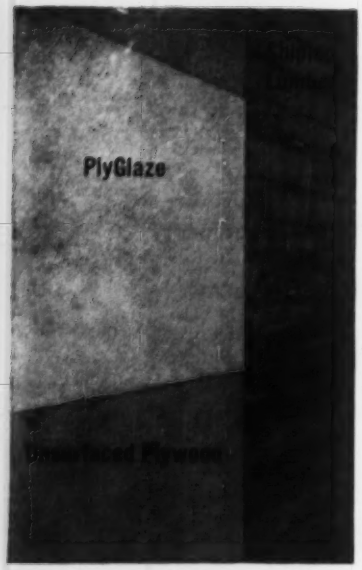


Photo taken right after stripping forms proves that you get the...

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READ "finest" both ways: PlyGlaze *itself* has the finest, smoothest surface of any form material; PlyGlaze-formed *concrete* surfaces are the finest—smooth, even-textured, with no trace of grain pattern. Savings on finishing costs alone frequently offset slightly higher cost of this premium material. See Sweet's File or use coupon for more information.

Another member of the famous Tree Life Family of Forest Products
Hard, glossy-smooth wear resistant fused resin-fiber surfaces.
Top-quality Exterior plywood (EXT-DFPA). Standard panel sizes.

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tached to parts of the form. The only bolts required are on the bracing members. For the test slab Jones used shores and beam clamps manufactured by Acrow, Inc., Carlstadt, N. J.

Four different sizes of form panel were used in forming the test shell—one on each quarter section. Form panels 40 in. wide and 10 ft long proved to be the most satisfactory. Other sizes tried were 20 in. by 10 ft, 20 in. by 20 ft and 40 in. by 20 ft. Panels consisted of ¾-in. plywood mounted in standard aluminum frames.

Similarly, four types of reinforcing were tested—one type in each quarter of the shell. That quarter of the roof in which ¾-in. rods on 16-in. centers were used was most satisfactory for placing concrete. Tried in other sections were ¾-in. rods on 12-in. centers, a 6-6-4 mesh, and ¾-in. rods on 12-in. centers set diagonally.

Perpendicular to the roof edge, along the line of demarcation between quarter sections, was a more heavily reinforced region, or so-called beam section. Each of these areas was reinforced with three ¾-in. bars that extended from the center column to the edge of the roof and two other ¾-in. bars extending midway between the edge and the center column.

The center-supporting concrete column is 2 ft sq, hollow in the center for drainage. Reinforcing consists of twenty 1¼-in. bars. The column, in turn, rests on a footing 9 ft sq, 2 ft thick, with two steel mats. In multi-bay structures, a footing only half this size would be needed.

The test structure also marked the first major use of "Idealite," a new lightweight aggregate. The aggregate was produced by Great Western Aggregates, Inc., Denver, Colo., and shipped from Great Western's plant at Laramie, Wyo., to Walt Flanagan Co. of Denver. This firm mixed and placed the concrete.

The new aggregate was reported to be stronger and less water-absorbent than most lightweight aggregates. Heat insulating and sound absorption qualities are also claimed for it. The concrete mix used weighed 93 lb per cu ft.

Forms were removed 44 hours after placing, when the concrete had attained a strength of 2,080 psi. The mix contained 5.9 bags of cement per cu yd. Tested after 72 hours, the concrete showed a strength of 2,610 psi.

The shell-roof structure was built for less than $2 psf. This cost included labor but not the forms. E. B. Jones estimated that the forms would have to be used 20 to 30 times to write off the original investment. He said, "The aluminum frames last indefinitely, but the plywood has to be replaced after seven or eight uses."

According to Jones, this type of roof construction has been slow to develop in the U. S. because of high labor costs here. He said that in Mexico the forms are built, used once and discarded because a Mexican workman works about two days to earn what an American construction worker makes in one hour.

A. A. & E. B. Jones Construction Co., Denver, Colo., will manufacture the forms for the first U. S. application of the roof—the 5,000-acre industrial district between Dallas and Fort Worth. Associated Architects and Planners, Dallas, Texas have been working with the builder, Great Southwest Corp., also of Dallas, on the industrial designs for the development. Architects O'Neil Ford and Richard Colley of Associated Architects and Planners worked with the Jones brothers in developing the forming system. Mexico City architect, Felix Candela, is a consultant for Associated Architects and Planners.

The Denver test was part of a general research project by Great Southwest to develop better and more economically constructed industrial buildings.

Oil Tank Fires

Preventing lightning fires in floating-top oil tanks

A method has been developed to protect floating-roof oil tanks from lightning-caused fires. Prof. E. R. Whitehead, director of the department of electrical engineering, Illinois Institute of Technology, together with engineers of the Chicago Bridge & Iron Co., Chicago, Ill., appears to have eliminated a hazard that has plagued this type of tank since its production. There have been about forty such fires since the first floating roof was installed on an oil storage tank in the early 1920's. Yet, these tanks have become increasingly popular because of their efficiency in reducing evaporation losses.

• **How fires start**—During a storm, an electric charge is induced on the floating roof of the tank by the electric field of a thunder cloud. Discharge of the cloud by lightning—on the roof, tank shell, or ground nearby—suddenly removes this field. The charge on the roof then is rapidly released and in passing to the ground travels through the rim vapor space around the roof

James F. Byrnes High School, Duncan, South Carolina
Architect: Lockwood Greene, Spartanburg, S. C.; *General Contractor,* Fiske-Carter Construction Company, Spartanburg; *Roof Deck Contractor:* Bonitz Insulation Company of South Carolina, Columbia, S. C.

THE 70,000 square feet of roof area on the James F. Byrnes High School is protected from fire with economical Gold Bond "Firefighter" Roof Deck. This also includes the walkways which extend from building to building. Wherever you go, you are protected by a roof deck that is naturally fireproof. The poured gypsum concrete deck *can't* burn!

Econacoustic Formboard, which was used on this school, insulates and sound-conditions the classrooms, gym and auditorium. And there are other Gold Bond Formboards available that can be varied according to specifications: Gypsum Formboard specially treated to resist mildew; Insulation Formboard that resists fungus and termites; Asbestos-Cement Formboard for additional fire-resistance.

Gold Bond "Firefighter" Roof Decks are adaptable to the barrelled and flat roofs on the Byrnes High School as well as being a practical covering for pitched roof designs. *Up to 30,000 sq. ft. may be poured in just one day...* and full load roof capacity is possible within an hour! Low dead load permits lighter supporting structures to be specified and saves on actual construction costs.

See how Gold Bond "Firefighter" Roof Deck can add safety and economy to your building designs. Send in the coupon below for full details. National Gypsum Company, Buffalo 2, New York.

Gold Bond
BUILDING PRODUCTS

"FIREFIGHTER"
GYPSUM ROOF DECK

NATIONAL GYPSUM COMPANY

NATIONAL GYPSUM COMPANY, Dept. EN-106

Gentlemen: Send me Technical Bulletin No. 503 with complete details on "Firefighter" Roof Decks.

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"Standard of Quality"

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Contractors know that when they put "Inferno" on the pile-driving rig, the job will keep going at a steady, profitable pace, with no question of bursting and its costly consequences. Record speeds and depths of drive have been made many times with this extra-strong, extra-durable steam hose . . . easily identified by the Goodall "Cloverleaf", and a black spiral stripe on the familiar red cover.

"INFERNO" STEAM HOSE specifications include high-temperature tube; multiple-layer, braided steel wire carcass; wear-and weather-resistant "synplastic"® cover. Sizes ½" to 3", inclusive, in maximum lengths of 50 feet.

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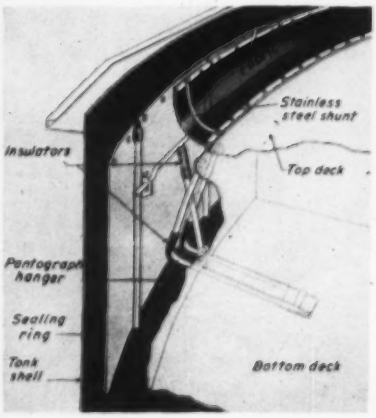


through pantograph metal supports. Fire is caused if the vapor is ignited by sparks generated at points of imperfect electrical contact.

• **Solution**—The method devised to eliminate the hazard provides a safe path for the charge to flow to ground. Stainless steel shunts on the outside of the vapor space, placed around the periphery of the roof, do this. At the same time, supports and pantograph hangers within the vapor area are insulated to prevent any lightning-induced currents from passing through.

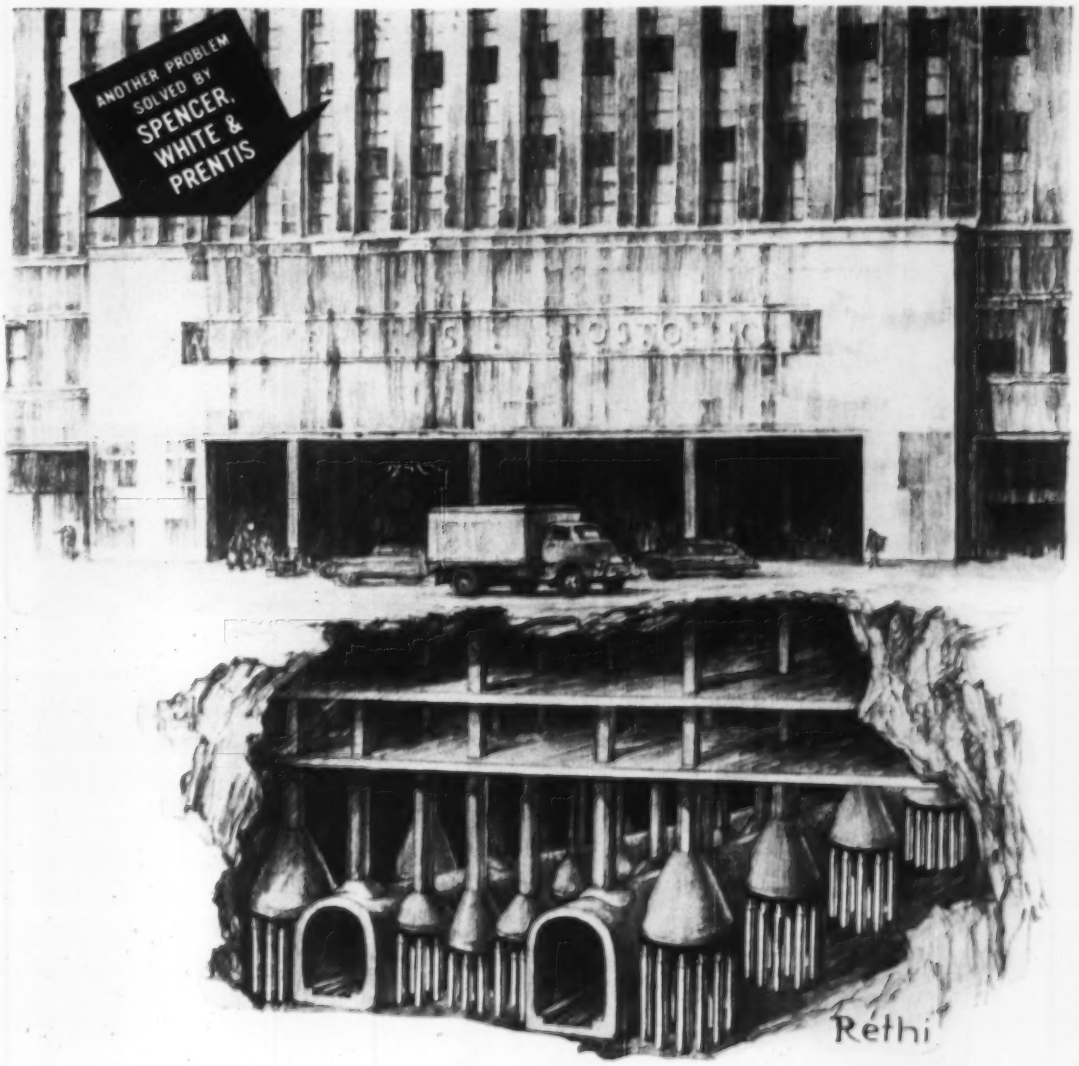
It was specified that pantograph hangers had to be able to hold the floating roof in place even during a fire. After investigation, an insulating material was found that could both pass a surge-current test and meet this fire-exposure requirement.

A full-scale model of the pantograph hanger was built for surge-current testing. To reproduce currents equivalent to lightning, a 400,000-volt surge-current generator was used. Then, to prove that sparking would occur under lightning conditions, a non-insulated hanger was tested. Tests were continued to determine the amount and type of insulation and shunting required.

Improvement of Clay Pipe

A contract to inaugurate a research program for improvement of clay sewer pipe was recently awarded to a Cleveland research firm, Horizons Incorporated, by the National Clay Pipe Research Corp., of Willard, Ohio.

The program will be under the direction of Cameron G. Harman, head of the ceramics department. According to Harman, the research program is directed at using modern technology and methods to produce a greater strength in clay piping while reducing its size and weight.



Project: Underpinning Main U. S. Post Office, Chicago, Ill. — *Contractor:* S. A. Healy Co., Chicago, Ill.

DEEP PRETEST PILES UNDERPIN CAISSONS BLOCKING CHICAGO'S SUBWAY TUNNEL

While digging under the city's main post office, the contractor for Chicago's new subway ran into his biggest headache. Instead of caissons extending to rock, he found belled caissons blocking further progress.

At that stage Spencer, White & Prentis were awarded a contract to underpin 16 of these caissons. The drawing shows our completed Pretest piles carrying the caisson loads (some up to 2,400 tons) to hardpan. Perhaps you would like us to explain how the Pretest method, pioneered by this company, transfers loads safely and dependably, and precludes danger of future settlement.

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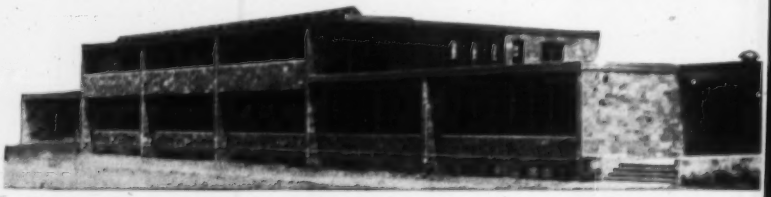
Immaculate Heart of Mary Church School
Youngstown, Ohio
P. Arthur D'Orazio, architect;
Charles Shutrump and Sons, Co., contractor.



TRUSCON® "O-T"® Open Truss Steel Joists, Ferrobord® Steeldeck and Projected Steel Windows Help Create This Exciting

Daylighted outdoor corridor

This interesting outdoor corridor has been designed into the new Immaculate Heart of Mary Church School in Youngstown, Ohio. Almost monastic in appearance, the second floor corridor has been roofed by extending Truscon "O-T" Steel Joists and structurals across its full width. Truscon Ferrobord Steeldeck completes the roof except for a run of clerestory windows which bring daylight directly into the Truscon Architectural Projected Windows of second floor classrooms.

Truscon "O-T" Steel Joists are light, strong, fire-resistant floor and roof supports. Lightweight and easy to handle, they lessen time and labor costs, save material in supporting framework and foundations.

Ferrobord Steeldeck is clipped or welded directly to the steel joists. It comes in long lengths to span three or more purlins. Easy to handle, easy to place, it roofs large areas quickly—flat, pitched or curved. Erection is from above, no scaffolding needed. Full length interlocking adds extra strength.

Truscon Steel Projected Windows provide superior ventilation plus minimum air infiltration. Integral baffles of Truscon's own special steel section provide casement-type full weathering contact—a Truscon exclusive feature in windows of this classification.

For more information and specifications on these quality Truscon building products, see Sweet's File or send coupon below.

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REPUBLIC STEEL

World's Widest Range of Standard Steels

SCHOOL MADE FIRE-RESISTANT WITH TRUSCON METAL LATH AND PLASTER

Membrane fireproofing is a system of fire protection using metal lath and lightweight aggregates. Used in ceilings, partitions and for shrouding structurals, membrane fireproofing makes possible buildings of lighter weight, greater useful space and lower cost. Truscon Metal Lath and plaster make a safer school.

SCHOOL CONCRETE PROTECTED WITH TRUSCON WELDED WIRE FABRIC

Pennies buy you "concrete plus." Truscon Welded Wire Fabric reduces the rate of cracking. High strength steel wires keep cracks tiny and practically invisible. Concreted areas get lifelong protection. Specify concrete PLUS Truscon Welded Wire Fabric for longer-lasting, expense-free concrete slabs.

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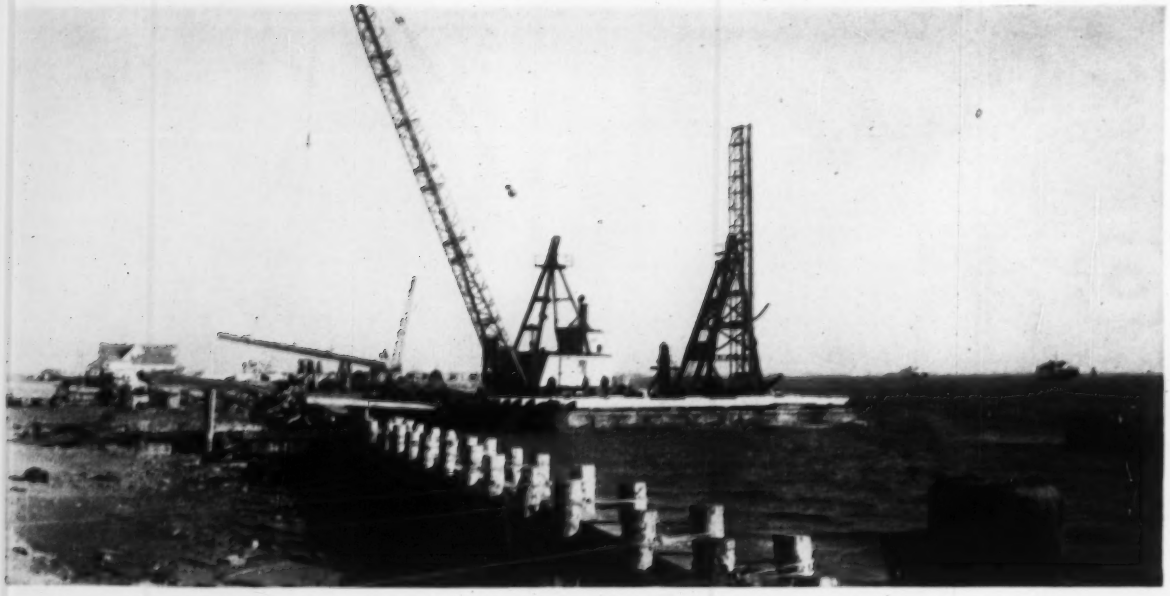

EFFICIENT WORK BARGE SET-UP consisted of revolving derrick with 130′ boom and 4-way pile driver.

Prestressed wharf piles resist side loads and salt water

FOR ESSO STANDARD OIL'S new bulk oil terminal at Newport News, Va., Tidewater Construction Corp. has erected a wharf on concrete piling of interesting design. The piles, 67′ to 77′ long and 13″x13″ in cross section with 8″ dia. hollow core) were cast at the site and prestressed with sixteen ⅜″ cables pretensioned under a total load of 112 tons. This prestressing stiffens the piles against side loads created by the thrust and pull of loaded tankers and barges. It also holds closed any cracks which develop in the concrete, so as to prevent exposure of the steel reinforcing to salt water.

The high early strength concrete needed for this construction was supplied by an 8½ bag mix properly processed in truck mixers of certified design, capacity, mixing speed and water control accuracy. It tested 4000 psi after 72 hours.

21 PILES AT A TIME were cast and prestressed in 7 lines of 3 piles each. Forms were reused 12 times.

CONCRETE was placed and vibrated around fibre Sonovoid tube, centered in form to create a weight-saving, cost-saving hollow core.

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

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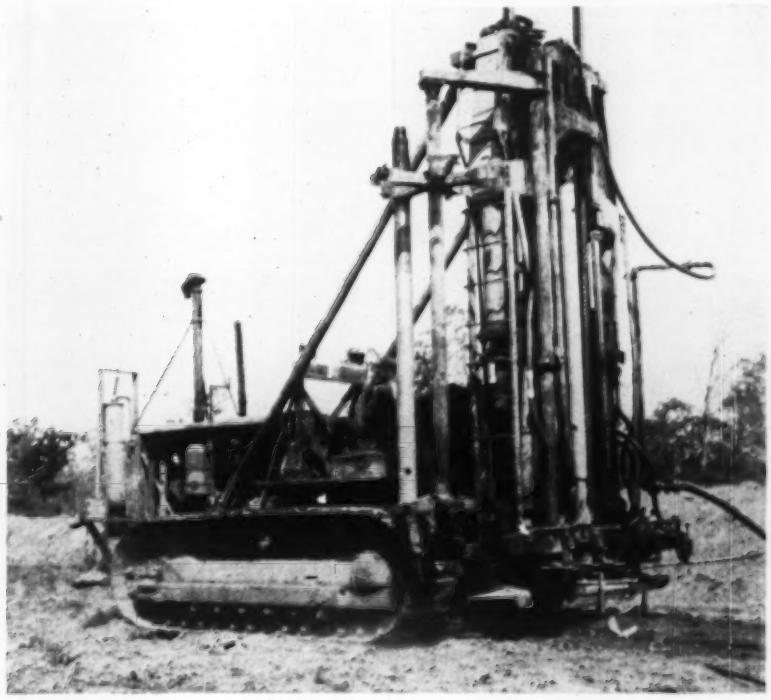

Rotary Drill Makes 7⅜-Inch Hole in Rock

A new dry type, low-cost rotary drill—the invention of a mining company that saw its profits dropping because of high drilling-and-blasting costs—has been so successful in their opinion that a separate corporation has been set up to manufacture and market the machine as a tractor-mounted rotary drill.

The drill was developed for drilling blast holes in overburden of coal seams, by the Robbins Coal Co. of Onconta, Ala., which has set up a separate corporation—the Robbins Machine & Manufacturing Co., Inc.

Among advantages claimed for the drill is that the rotary with a 7⅜-in. bit drills a larger blast hole than possible with wagon drills, and permits blasting on a larger pattern. The drill permits a maximum drilling depth of 65 ft, which offers the advantage of being able to drill to the full depth of the cut instead of in 12- or 15-ft lifts. Experience with test models in Alabama has seen the drill used in all types of rock excepting hard granite.

Drill speed of the rotary has varied from 1 ft per min in hard blue sandstone to as high as 6 ft per min in softer foundations. The drill features a mechanical drive as opposed to pneumatic drive in most rotaries. First models were adapted for mounting on Caterpillar D6 tractors, but adapters are now provided for mounting the drill on non-Caterpillar crawler machines. Power to drive the rotary comes from the rear power takeoff of the tractor through a Fuller K8 or K11 transmission, with four speeds forward and one reverse.

Through a chain drive the transmission powers a right angle connection to a square shaft running the height of the drill unit. This shaft powers a sliding gear box which rotates the drill steel at speeds between 25 and 120 rpm.

Down pressures as high as 30 tons on the drill bit are obtained by two 8-in. hydraulic cylinders operating off a 70-gpm hydraulic two-stage pump also driven from the power takeoff of the tractor. These pistons operate a rack-and-pinion which raises and lowers the drill pipe by two chain sprockets, providing the necessary down pressure on the bit. A 600-cfm air compressor forces air into the drill pipe to blow chips and dust away from the bit, the compressor being used either as a separate unit or mounted on the tractor. The drill can handle bit sizes from 5 to 12 in.

The drill mast is hinged and can be quickly broken over, making the entire unit portable in a matter of minutes. Supporting braces on the latest models are swiveled so they need not be removed for the breakover. A splined coupling on the square shaft eliminates capscrews which would otherwise have to be removed. Total weight of the drill unit is about 24 tons, including ballast and oil, but excluding tractor. Robbins Machine & Mfg. Co., Inc., Onconta, Ala.

(New *Products continued on page 74*)

Air-Operated Sump Pump

A new air-operated sump pump, rated at 340 gal per min against a 10-ft head, comes in either steel or bronze. The pump operates with a maximum head of 95 ft and is designed for removing water or other liquids from tanks, sumps, ditches, manholes and traps. It requires no priming.

The pump has an 8-in. base diameter, is 23 in. high. Air inlet is ¾ in. in diameter and discharge outlet 2½-in. Low air consumption, governor-controlled motor and built-in lubrication system are featured along with lightweight construction—steel model is 56 lb, bronze 75 lb. Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.

That's Why Most Experienced Bit Users are Switching to

New England
CARBIDE-TIPPED
MASONRY BITS

THE WORLD'S ONLY COMPLETE LINE OF Carbide-Tipped MASONRY BITS

YOU NEED THE RIGHT Carbide-Tipped BIT FOR EACH DRILLING JOB!

Don't try to use an ordinary bit to do the tough drilling jobs that only New England Carbide-Tipped MASONRY BITS can handle. And — don't use the wrong type when only the right type will do. Equip with the complete New England line — and eliminate wasted labor — slow, costly work — bit breakage — and disappearing profits. Start using the line made of heat-treated alloy steel, with the super-sharp carbide tips and tip-to-shank flutes that assure positive dust removal.

Cyclo-twist®
ROTARY BITS
For ROTARY DRILLING of Medium Masonry — Sizes 7/64" to 1½".

Cyclo-Core®
ROTARY BITS
For ROTARY DRILLING of Hard Masonry, including Hard Concrete and Vitreous Tile — Sizes ¼" to 6".

Thunder-twist®
HAMMER BITS
For One-Man HAMMER DRILLING of all Hard Masonry and Granite — Sizes 3/16" to 1¼"

FOR THE ANSWER TO THE QUESTION — "What Masonry Bit Should I Use?" — WRITE for our "WHAT and HOW" MANUAL. It's FREE, and very helpful.

New England
Carbide Tool Co., Inc.
55 W. Commercial St.,
Medford, Mass.

Please send me FREE "WHAT and HOW" MANUAL

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Scaffolding Hangs Easily With Hook or Scissor Hanger

Versatility is offered in a scaffolding that can be suspended from structural beams, angles, junior beams and open-web joists. Called Swing-Lo Suspended Scaffolding, the new product is lightweight and can be adjusted for working height.

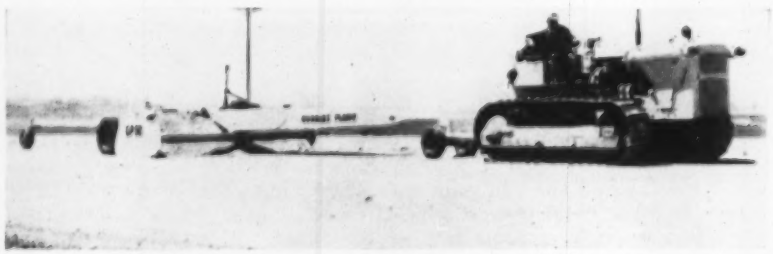
The scaffolding comes either with a hook for suspension from junior beams, open-web joists and angles, or with a scissors-type hanger for larger beams. Used in sets of four or more, the suspenders carry wood beams, which, in turn, carry the working platform. A forged pigtail on individual hangers permits a variety of interchangeable hangers to be used. The smallest hanger will carry a single 4 x 4-in. beam, while the largest can take two 8 x 12-in. timbers.

When equipped with the scissors-type hanger, the suspension system can actually be rolled along the flange of the beam that supports it. Scissors come in two sizes—one for 6 to 10-in. flange widths, the other for 10 to 20-in. flange widths. Swing-Lo Suspended Scaffold Co., Covert, Mich.

Melting Compound Marketed Free of Chloride and Calcium

A new chloride-free ice-and-snow melting material in prismoid form, said to be harmless to pavements, metals and vegetation has been announced by Speco. Known as Ice Rem-CF, the material is said to be 99.99% chemically active and contain neither calcium nor chloride. For this reason, the manufacturer says that the material does not produce a heat effect as part of its melting process, and that it will not corrode aluminum or other metals. Since the material also produces a combined melting and abrasive action, it has been recommended for use in street car, bus and truck sand boxes and under spinning automobile wheels.

Because its molecular structure has a greater depressing point on ice than salt, Ice Rem-CF is said to have substantially more thawing capacity at lower temperatures and in the sub-zero range, leaving no messy residue and not being hygroscopic. Consequently, it is cleaner to use and simpler to store than similar products. Speco, Inc., Cleveland, Ohio.



Leveling Plane Tested on Colorado Road Project

A new-type plane for leveling sub-base and base courses on roads has been tested with excellent results on a Colorado road-building project, according to the manufacturer.

The machine, towed by a conventional tractor, is said to incorporate new designs to afford an effective leveling length of 50 ft. A hydraulic system automatically maintains a straight line of plane and is said to enable the blade to shave off humps and fill dips effectively. The attachment is transportable, with the rear boom and gage wheel folded to reduce overall length to 35 ft for transport and storage. Gurries Mfg. Co., 1720 S. First Street, San Jose, Calif.

Plastic Material Repairs And Waterproofs Concrete

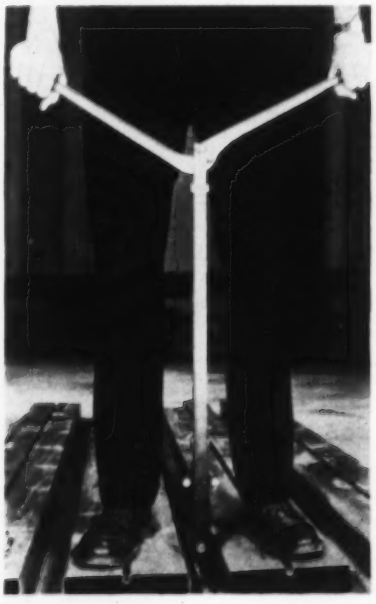
Severe spalling and cracks in concrete can be permanently and effectively repaired with Permagile, according to its manufacturers. Among other claims made for the epoxy-based plastic: It joins bricks, tile, concrete blocks and other masonry items with a bond stronger than the joined materials; it is hard, tough, elastic and waterproof; it won't shrink or expand; it is immune to the ravages of time and weather; alkalis and most acids and chemicals don't affect it; average strength is 35,000 psi in compression, 8,000 to 10,000 psi in tension. Applications include waterproofing and repair of tanks, sewers, floors, walls and basements; also tile-setting and roadway surfacing. PERMAGILE CORP. OF AMERICA, 37-23 33D ST., LONG ISLAND CITY 1, N. Y.

Tool Clinch-Fastens Panels Eliminates Spot-Welding Time

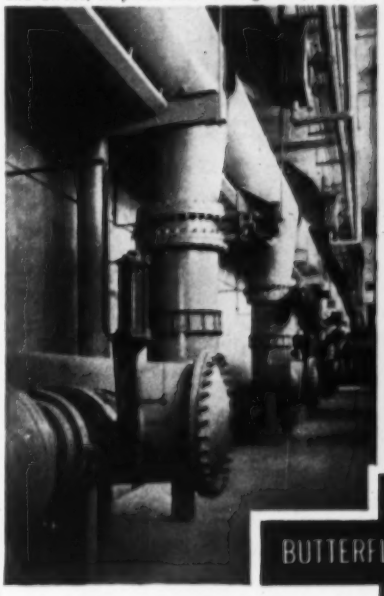
A manufacturer of aluminum and steel building panels has developed a tool for fastening the panels by clinching the metal. The new tool speeds construction by eliminating time required to spot weld panels together.

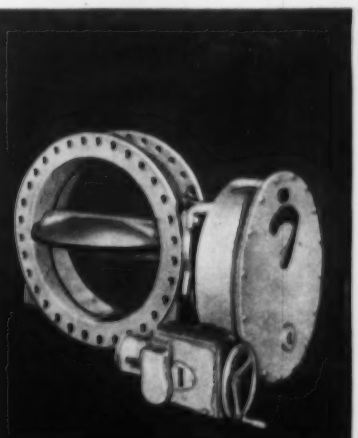
Called a "Riv-Clinch" tool, the device can be operated by one person. It comes in two models—one for use with Fenestra's type "D" long-span cellular steel panels, and a lighter model for use on type "FA" field-assembled and type "F" panels.

The "D" tool can be used on 14-ga



DROP-TIGHT SHUTOFF R-S Rubber-Seated Butterfly Valves give drop-tight closure to 125 psig through wedge-type action of the disc within a one-piece rubber seat. 65 of these valves, installed as shown for service in the San Jacinto River project near Houston, gave a substantial space reduction and direct, in-place cash savings of $124,000.





FOR HIGH-PRESSURE SERVICE SMS Babbit-Seated Butterfly Valves are built to give tight shutoff and meet the rugged demands of high-pressure service. They are available for shutoff pressures up to 200 psig, and for a wide range of velocities, including open-end free discharge.

BUTTERFLY VALVES

GET POSITIVE SHUTOFF, CUT CONSTRUCTION COSTS

For high or low-pressure water service, SMS has the Butterfly Valve to give you tight shutoff and help reduce construction costs. Using SMS or R-S Butterfly Valves in place of conventional gate valves permits a much more compact piping layout, means substantial savings in the initial building costs. For full information on the complete SMS valve line — Butterfly Valves, Ball Valves and Rotovalves —see our local representative or write S. Morgan Smith Co., York, Pa.

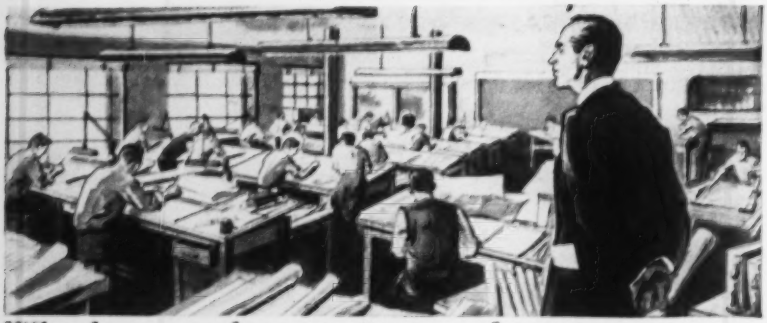
HYDRAULIC TURBINES · PUMPS · GATES & HOISTS · TRASH RAKES · ACCESSORIES

HYDRODYNAMICS

ROTOVALVES · BALL VALVES · BUTTERFLY VALVES · FREE-DISCHARGE VALVES · CONTROLLABLE-PITCH SHIP PROPELLERS

S. MORGAN SMITH

AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED • TORONTO



Whether you have many employees . . .

or just a few . . .

Give them the protection of Hartford Group Insurance!

Once only "big" employers could have Group Insurance plans for their workers.

That time is past. Hartford now writes Group coverages for companies with *as few as 10* employees (except in Florida, where the minimum is 15).

For groups of ten to twenty-four people, Hartford offers convenient package plans. For larger groups, Hartford can "custom tailor" Group coverage to meet exact needs—or to fit a budget.

These plans can include coverages for:

- **Accidental Death and Dismemberment**
- **Weekly Disability Expenses**
- **Laboratory and X-ray Expenses**
- **Poliomyelitis Expenses**
- **Major Medical Expenses** (For groups of 25 or more)

Group Insurance by *Hartford* offers you these worthwhile special advantages:

1. **Fast, expert claim service** through a nation-wide network of nearly 200 claim offices relieves you of practically all details and responsibility on claim matters. These facilities are particularly valuable to your branch offices and traveling employees.
2. **Streamlined premium payment procedures** and simplified policy forms reduce your work and lower your Group Insurance administration expense.
3. **Low cost** for you and your workers through efficient procedures and loss engineering activities that prevent abnormal loss experience.

You should certainly look into what Hartford has to offer. *Both you and your employees stand to benefit!* Call your Hartford Accident and Indemnity Company Agent or your insurance broker for details.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company
Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company
Citizens Insurance Company of New Jersey . . . *Hartford 15, Connecticut*
New York Underwriters Insurance Company . . . *New York 38, New York*
Northwestern Fire & Marine Insurance Company
Twin City Fire Insurance Company . . . *Minneapolis 2, Minnesota*

steel or lighter. Clinches are specified 3 ft c-c.

According to the manufacturer, tests at Cornell University led to developing this type of fastening until it could take shears and carry loads of a comparable welded construction system. FENESTRA, INC., 2250 E. GRAND BLVD., DETROIT 11, MICH.

Drill's Integral Pusher Leg Is Automatically Retracted

A new model rock drill equipped with automatic retraction of its integral pusher leg and with all controls concentrated for single-hand drilling operation is now available.

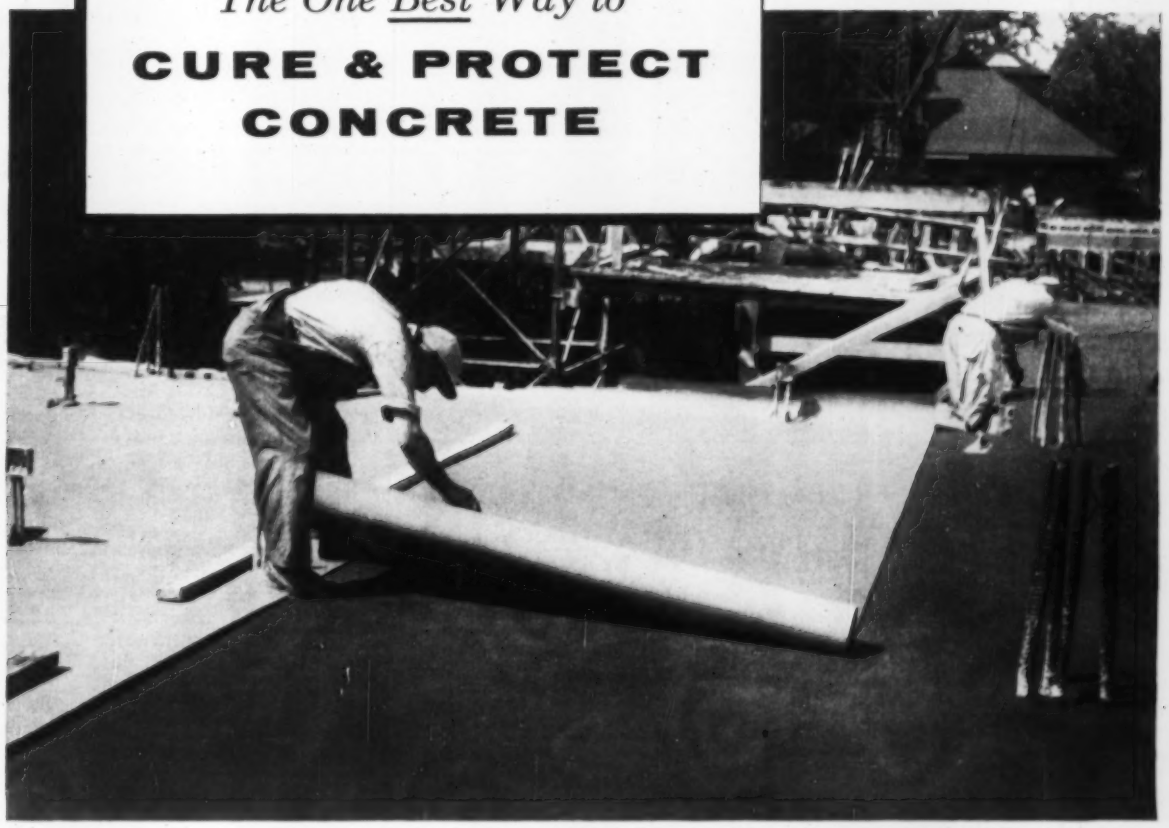
Up to 30% increases in drill footage per hour claimed as a result of these design advances. Machine downtime for new positions and steel changes are said to be held to a minimum by the automatic leg retraction feature, which is controlled by a handle grip and operated without shutting off the drill. In operation the driller exerts moderate pressure on the hand grip to release the feed pressure, and further depresses the control to retract the "stinger" in the leg. Releasing hand pressure automatically stops retraction and restores full feed pressure. To round out the full-hand drill control, a pair of levers on the backhead provide an adjustable feed pressure and extra-strong blowing. ATLAS COPCO PACIFIC INC., 930 BRITTAN AVE., SAN CARLOS, CALIF.

Water and Compressed Air Charge Fire Extinguisher

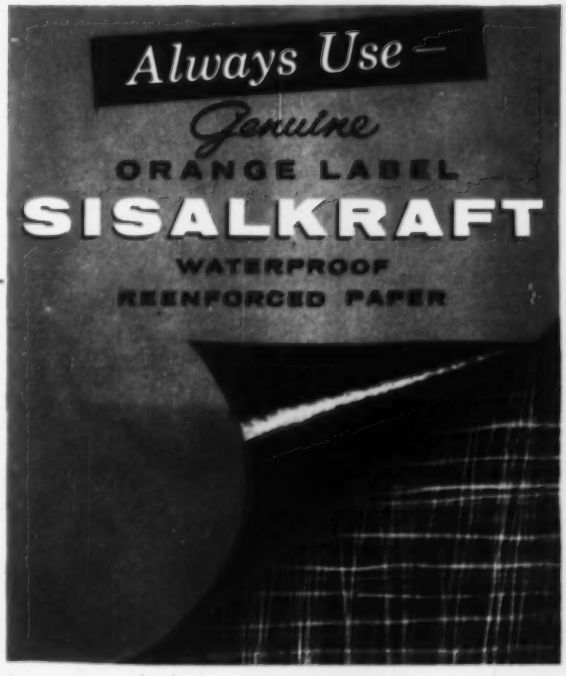
A fire extinguisher introduced by Ansul Chemical Co. can be charged at the nearest water faucet and compressed air outlets. To fight fires, the operator squeezes the carrying handle, and air at 100 psi squirts a stream of

The One Best Way to

CURE & PROTECT CONCRETE



New concrete must dry slowly for maximum strength. It also needs protection against marring and staining. Sisalkraft provides both . . . *and at low cost!* No kid glove handling with tough Sisalkraft . . . you can apply it *fast* and can even use it over again. Write us at Attleboro, Mass. for free booklet, "Curing & Protection for Better Concrete".



Other Quality Products of the SISALKRAFT Line include:

COPPER ARMORED SISALKRAFT
Pure copper bonded to reenforced paper. For all concealed flashing and waterproofing.

SISALKRAFT MOISTOP
Permanent vapor barrier.

SISALATION
Reflective insulation and vapor barrier.

SISALKRAFT VAPORSTOP
Rot-resistant vapor barrier

SISALITE
Pure polyethylene film

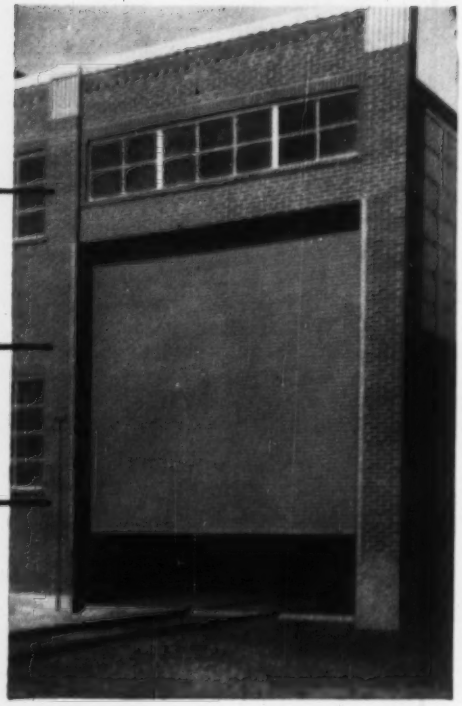
AMERICAN SISALKRAFT CORPORATION
DEPT. ENR-10, ATTLEBORO, MASS.
Chicago 6, New York 17, San Francisco

Doors open straight upward--no space is wasted anywhere

Maximum protection against theft, riot intrusion, vandalism

Every door is REGISTERED[1] for your protection

Extra-heavy zinc coating, for lasting weather resistance[2]

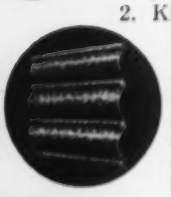


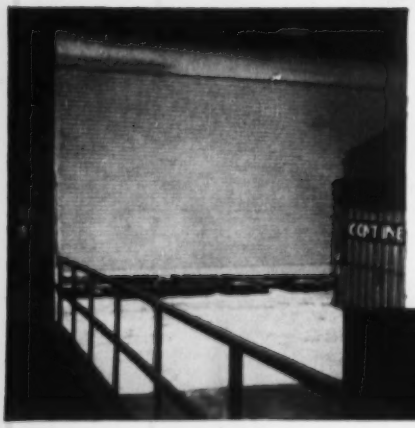
Kinnear Rolling Doors

You get *more* protection plus *more* efficiency in Kinnear Rolling Doors. Coiling above the doorway, they open out of the way! They never block light from close-by windows or fixtures. No floor, wall, or ceiling space is sacrificed. Hoists, conveyors, high-lift fork trucks and similar equipment can be used to maximum advantage.

1. Details on every Kinnear door are REGISTERED—kept in fire-safe vaults. Damaged or worn parts are *permanently* replaceable. Your Kinnear Door is never "orphaned."

2. Kinnear's rugged interlocking-slat curtain is heavily galvanized (1.25 ounces of pure zinc per sq. ft., A.S.T.M. Standards). In addition, the special Kinnear Paint Bond assures immediate, thorough coverage and adhesion of field-applied paint.





Kinnear Rolling Doors are engineered to fit any need, with manual-lift, crank, chain or electrical operation. Controls for motorized doors can be placed at any number of convenient spots. For long, low-cost service, insist on Kinnear Rolling Doors! *Write for catalog.*

The KINNEAR Mfg. Co.
FACTORIES
1820-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.

KINNEAR ROLLING DOORS
Saving Ways in Doorways

. . . New Products

water 35 to 40 ft. A gage on top of the tank shows whether or not air pressure is high enough.

Underwriters' Laboratories classify the extinguisher 2-A. Water capacity is 2½ gal. Antifreeze will assure operation at temperatures as low as —40F. Single-unit prices are $47.00, with stainless steel tank; $56.50, brass; $64.60, chromium-plated brass. ANSUL CHEMICAL CO., MARINETTE, WIS.

Powder Forms Weak Acid That Cleans Mortar From Masonry

Lime and mortar can now be removed from brick and other masonry work by a solution claimed to combine the cleaning qualities of strong liquid acids with the advantages of an extremely low corrosion rate. According to the manufacturer, the solution, with a pH of 5.2 (7 is neutral), can be a substitute for muriatic acid, yet does not harm or discolor stainless steel or aluminum doors and windows, nor copper, chrome or nickel trim.

Cleaning time for the solution is comparable to muriatic acid. It is brushed on, then washed off with water. It is cited as causing no noticeable discoloration nor other harmful effect on sandstone, limestone, glazed brick, common brick, quarry tile, prepared mortar, or lime-cement mortar.

In its powder form, the substance is described as non-irritable to skin. Other advantages include lower cost than acid and elimination of carboy breakage.

Suggested mix is 1 lb of powder to 5 gal of water. BERMAN CHEMICAL CO., 841 SUPERIOR ST., TOLEDO 4, OHIO.

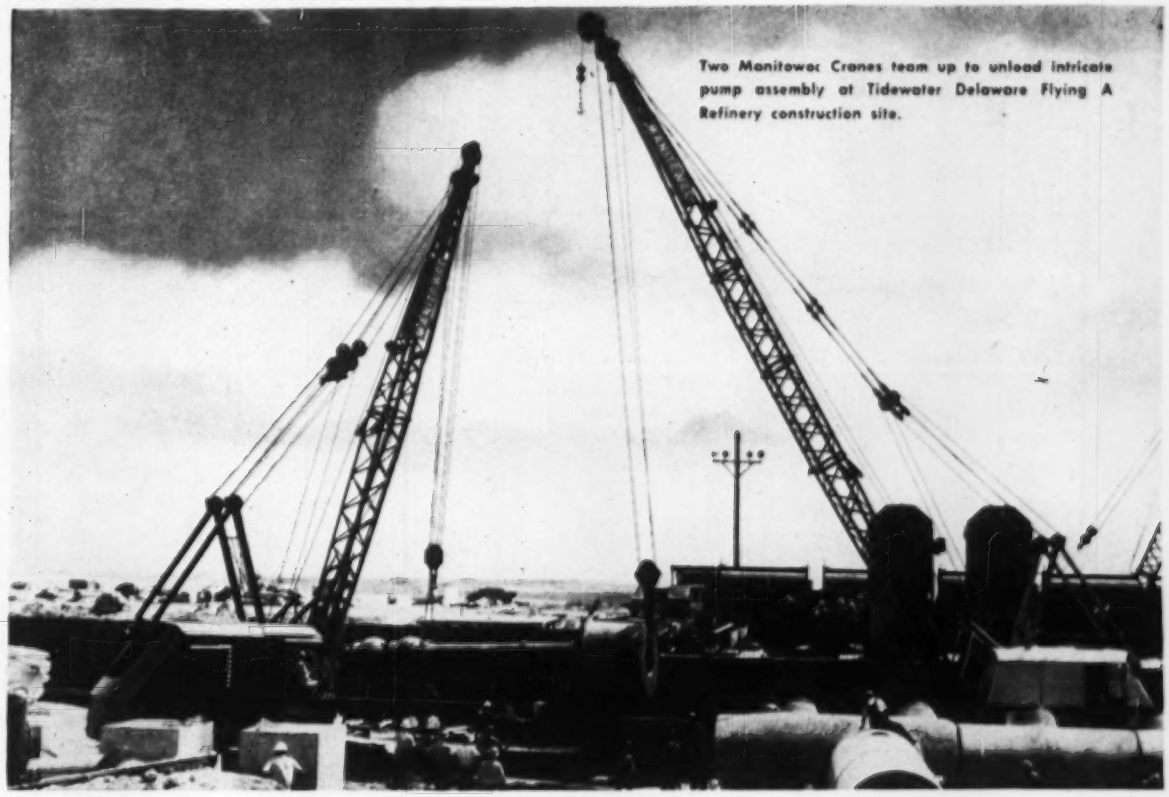
Gooseneck Crane Fitted For Low Clearance Jobs

A new 15-ft gooseneck crane attachment, featuring low clearance for in-plant and yard materials handling, is announced by Schield.

Company engineers say that the new attachment has a minimum working clearance height of 10 ft 5 in., when mounted on the self-propelled model CR-35 Bantam, for which it was designed. Working radius at this clearance height is 17 ft 6 in. and travel-with-load crane capacity is listed as 4,675 lb.

The new attachment is a specially constructed 15-ft box boom, with the centerline of the top section offset 25 deg by the insertaion of a wedge with an angle of 25 deg. The wedge is held in place by heat-treated capscrews and is easily removed to convert to a straight-boom operation. SCHIELD BANTAM CO., WAVERLY, IOWA.

(*New Products continued on page 80*)



Two Manitowoc Cranes team up to unload intricate pump assembly at Tidewater Delaware Flying A Refinery construction site.

24 Manitowoc Cranes Help Raise Giant Tidewater Oil Refinery

A total of 24 Manitowoc Cranes is working on the erection of the huge new Tidewater Oil Company Delaware Flying A Refinery near Delaware City, Del. Covering 5000 acres, the ultra-modern refinery will be the biggest built at one time as a single unit, with an expected throughput of 130,000 barrels of oil per day.

C. F. Braun and Co., Alhambra, Calif., designers and engineers for the project, is also handling actual construction of the refinery. The Braun Co. is using 22 Manitowoc crawler cranes, and two Manitowoc Mobile Cranes, units ranging in capacity from 40 to 80 tons, with booms 60 to 120 feet long.

A tremendous variety of jobs are handled by the Manitowocs. Some of the work includes: unloading freight cars, stacking incoming materials, transporting machinery to the construction site, pouring concrete, erecting scaffolding and rigging poles, setting steel, erecting 250 miles of elevated pipeline, laying underground conduits and setting high velocity water pumps on foundations.

Machine downtime on the Tidewater project has been negligible, with no holdup of work due to breakdowns . . . a real testimonial to the ruggedness and solid engineering for which Manitowoc cranes are famous!

Your Manitowoc Distributor will be glad to supply all the details on Manitowoc's versatile line of cranes and excavators — call him today!

MANITOWOC ENGINEERING CORP.,
MANITOWOC, WIS.

What the Men on the Job Think of Their Manitowocs!

"For steel erection you can't beat Manitowoc. One of the finest machines on the market."
Don Rossillo, Crane Operator

"The 2800 is the best motor crane on rubber that was ever made. It will pick up 20 tons without an outrigger and walk away with it."
Jack Streets, Ironworker's Foreman

"For hooking rigs, setting steel, or pouring concrete, Manitowocs can't be beat. And they stand up very well. Been working here an 8 hour day, 5 day week for about ten months and have never been down a minute for repairs."
R. L. Slater, Operator

"This mobile model 2800 is one of the best cranes for all-purpose work. They are strong and smooth running, both on the hoisting and the travelling on the road. Best machine I ever ran, truck or cat."
Prince A. Congleton, Operator

"Sturdiest truck crane on the market, and I've run them all."
Harry Racine, Operator

MANITOWOC
SHOVELS 1-5½ YD. Speedcrane CRANES 20-100 TON

THE NEW BARCO VIBRA-TAMP*

* Companion Tool to the Barco Rammer, Famous for Deep, Penetrating Soil Compaction!

A Versatile Tool for MAXIMUM COMPACTION of

1. Granular Base Materials

2. Bituminous Surfacing

EFFICIENT—one man does the work of many with VIBRA-TAMP. Operates in any weather. Works flush against curbs, foundations, and walls.

ECONOMICAL—to buy, operate, and maintain! No special tools required. Saves your bigger, costlier equipment. Tamp up to 750 sq. yds. per hour.

SAFE—moving parts fully enclosed. Special vibration dampers reduce operator fatigue. Simple controls. Handle adjustable to comfortable height.

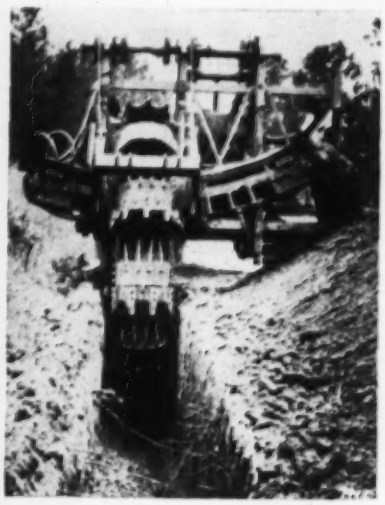
DURABLE—simple design and quality construction keep VIBRA-TAMP on the job day in and day out. Carburetor unaffected by vibration.

VERSATILE—use VIBRA-TAMP for all kinds of work—wherever low cost is a prime consideration. Take VIBRA-TAMP on the big jobs for hard-to-reach areas. Use it for patching streets, driveways, and roads. VIBRA-TAMP has no economy equal—a real work-horse on sand, gravel, soil, chippings! *Ask for new catalog No. 630.*

Worldwide Sales and Service

BARCO *Serving Industry Since 1908*
MANUFACTURING COMPANY, 518V Hough St., Barrington, Ill.

. . . New Products



Ditcher Digs in Own Tracks With Three-Position Wheel

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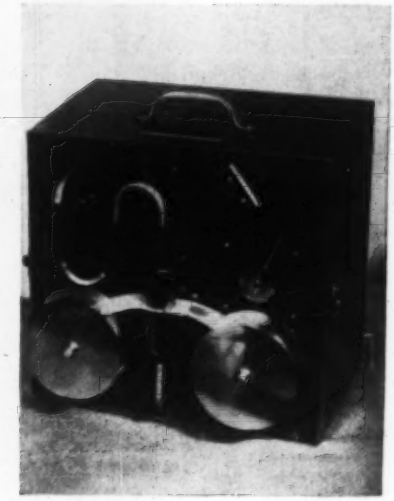
MISSING IN NUM

Continuous Smoke Sampler Aids Air Pollution Fight

As an aid to the battle against air pollution, Research Appliance Co. offers the AISI Smoke Sampler. It can be used to (1) make records of smoke concentrations over a long period of time, (2) trace sources of smoke and particles in the air.

The sampler, according to the company, records smoke and other air pollutants by pumping air samples through a filter-paper tape reeling off at half-hour, hour or two-hour intervals. An electric light shines through the polluted tape and the reduction of light transmission is measured by a light-sensitive cell and millivolt meter.

(Continued on page 85)



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NUMBER ONLY.

Pipes ng

cate are n, a new tempera- l in 3-ft- [illegible] for pipes up to 33 in. in diameter. Wall thicknesses range from 1 in. to 4 in. Metal bands hold the half-cylinders in place around a pipe.

Even the largest sizes are said to be lightweight and easy to handle. The manufacturer describes the material also as flame-resistant, chemically inert, insoluble in water, dimensionally stable, wear-resistant, easily workable with ordinary tools and strong enough to be fastened over irregular shapes without fear of breakage. KEASBEY & MATTISON CO., AMBLER, PA.

Emergency Warning Flasher Is Visible for One Mile

A new powerful red flashing emergency warning light is offered to mark obstructions, repair or danger areas.

Said to be visible for one mile, the unit includes a new power pack 4" by 5", consisting of two 6-v lantern batteries wired in parallel to yield, what the manufacturer claims, is the most powerful dry battery unit of its type ever developed. Laboratory tests indicate useful life of more than 50 hours of continuous flashing.

To set up, the light-head is merely placed on the battery terminals and two screw caps tightened. BURGESS BATTERY CO., FREEPORT, ILL.

Valve-in-Head Engine for Construction Applications

A new valve-in-head compact four-cylinder V-type engine designed for general application in the construction field has been announced by Avco.

Designated as Model CV4-180, the engine delivers 70 hp at 3000 rpm, and is air cooled.

The engine weighs about 463 lb, less electric starter, generator and flywheel housing which are offered as optional equipment. LYCOMING DIV., AVCO MFG. CORP., STRATFORD, CONN.

Midget 4-Blade Power Trowel Floats and Trowels Non-Stop

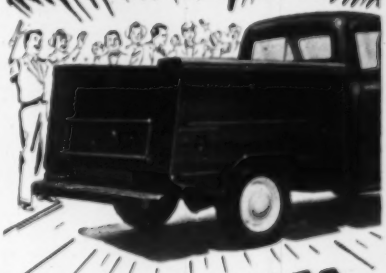
A new small model 4-blade cement finishing machine—smallest in a line of three power trowels—has been announced by Superior. The "midget" weighs only 75 lb, its light weight making it suitable for equipment rental firms, smaller contractors. The machine is small enough to pass through narrow doorways and light enough for one man to carry up or down stairs.

A crank adjustment permits the operator to switch blade pitch when the unit is in motion, thereby floating and troweling concrete in one non-stop operation. The crank may be used to change blade pitch up to 30 deg for polishing purposes. The machine is powered by a 1.5-hp gasoline motor and has a blade sweep diameter of 23 in. SUPERIOR CEMENT TOOL CORP., 11616 WRIGHT RD., LYNWOOD, CALIF.

POWERS

Service-Master®

THE ALL-PURPOSE SERVICE BODY



ACCLAIMED BEST

BY CONSTRUCTION EQUIPMENT MEN

Sales records prove that Service-Master is used by more service men than any other body. Service-Master makes work easier . . . saves more time . . . *builds greater profits!*

EXTRA FEATURES!

"Freeze-free" hinges that can't bind • Concealed fenders to protect compartment walls • "Hi-Lo" floor for easier loading • "No-Bounce" bins to keep parts in place • "Puddle-Proof" cargo area . . . and many other "extras".

OUTLASTS SEVERAL CHASSIS Carried in stock in all 48 states by LOCAL Distributors!

FIND OUT FOR YOURSELF Prove to yourself that Service-Master gives you more for your money. Mail this coupon for complete details and price information today.

McCABE-POWERS AUTO BODY CO.

5900 N. BROADWAY • ST. LOUIS 15, MO.
625 CEDAR ST. • BERKELEY 10, CALIF.

Please send me complete details on SERVICE-MASTER

Name _____

Company _____

Address _____

City & State _____

TZS

THE NEW BARCO VIBRA-TAMP*

* Companion Tool to the Barco Rammer, Famous for Deep, Penetrating Soil Compaction!

A Versatile Tool for MAXIMUM COMPACTION of

1. Granular Base Materials

2. Bituminous Surfacing

EFFICIENT—one man does the work of many with VIBRA-TAMP. Operates in any weather. Works flush against curbs, foundations, and walls.

ECONOMICAL—to buy, operate, and maintain! No special tools required. Saves your bigger, costlier equipment. Tamp up to 750 sq. yds. per hour.

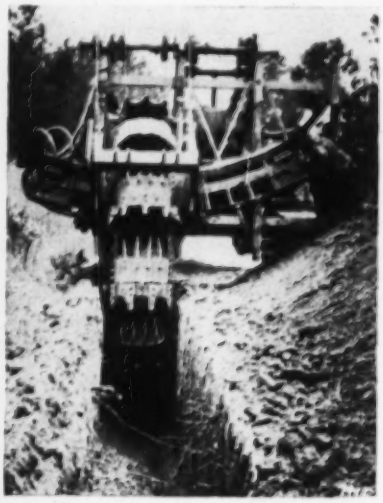
SAFE—moving parts fully enclosed. Special vibration dampers reduce operator fatigue. Simple controls. Handle adjustable to comfortable height.

DURABLE—simple design and quality construction keep VIBRA-TAMP on the job day in and day out. Carburetor unaffected by vibration.

VERSATILE—use VIBRA-TAMP for all kinds of work—wherever low cost is a prime consideration. Take VIBRA-TAMP on the big jobs for hard-to-reach areas. Use it for patching streets, driveways, and roads. VIBRA-TAMP has no economy equal—a real work-horse on sand, gravel, soil, chippings! *Ask for new catalog No. 630.*

Worldwide Sales and Service

BARCO *Serving Industry Since 1908*
MANUFACTURING COMPANY, 518V Hough St., Barrington, Ill.



Ditcher Digs in Own Tracks With Three-Position Wheel

Development of a new ditcher able to dig to within 2¼ in. of the outside edge of either its right- or left-hand crawler is announced by Gar Wood Industries.

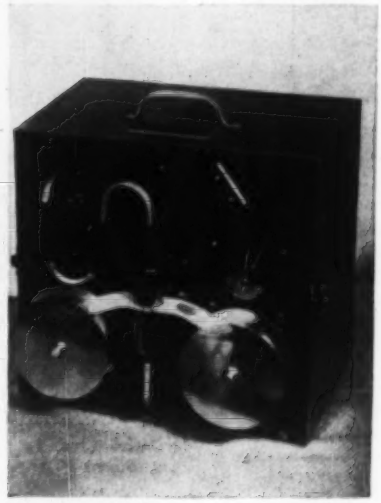
Known as the Gar Wood-Buckeye 308TP, the position of the new ditcher's digging wheel can be shifted to three separate positions, to the left or right of the main frame or in line with the main frame. The manufacturer claims that this feature overcomes much of the expensive hand digging that has heretofore been necessary when a conventional ditcher met such obstructions as buildings, poles and fences. Other features of the machine include hydraulic conveyor drive, hydraulic digging wheel hoist, variable bucket spacing, split-shaft excavator drive and simplified grouped operator controls. Gar Wood Industries, Inc., Wayne, Mich.

Continuous Smoke Sampler Aids Air Pollution Fight

As an aid to the battle against air pollution, Research Appliance Co. offers the AISI Smoke Sampler. It can be used to (1) make records of smoke concentrations over a long period of time, (2) trace sources of smoke and particles in the air.

The sampler, according to the company, records smoke and other air pollutants by pumping air samples through a filter-paper tape reeling off at half-hour, hour or two-hour intervals. An electric light shines through the polluted tape and the reduction of light transmission is measured by a light-sensitive cell and millivolt meter.

(*Continued on page 85*)



It is pointed out that the low cost ($165) of the device makes it possible for cities, utilities and industrial firms to scatter a number of them over a wide area to get a comprehensive set of samplings. The company lists some of the users of the sampler: Brown & Williamson Tobacco Corp., City of Cincinnati, Consolidated Edison Co. of New York, County of Los Angeles. The American Iron and Steel Institute sponsored the research that produced the Smoke Sampler. Research Appliance Co., Box 307, Allison Park, Pa.

Molded Insulation for Pipes Is Lightweight and Strong

Asbestos and calcium silicate are molded together in a Kaytherm, a new pipe insulation designed for temperatures up to 1,350 F. Produced in 3-ft-long half-cylinders, it is made for pipes up to 33 in. in diameter. Wall thicknesses range from 1 in. to 4 in. Metal bands hold the half-cylinders in place around a pipe.

Even the largest sizes are said to be lightweight and easy to handle. The manufacturer describes the material also as flame-resistant, chemically inert, insoluble in water, dimensionally stable, wear-resistant, easily workable with ordinary tools and strong enough to be fastened over irregular shapes without fear of breakage. Keasbey & Mattison Co., Ambler, Pa.

Emergency Warning Flasher Is Visible for One Mile

A new powerful red flashing emergency warning light is offered to mark obstructions, repair or danger areas.

Said to be visible for one mile, the unit includes a new power pack 4" by 5", consisting of two 6-v lantern batteries wired in parallel to yield, what the manufacturer claims, is the most powerful dry battery unit of its type ever developed. Laboratory tests indicate useful life of more than 50 hours of continuous flashing.

To set up, the light-head is merely placed on the battery terminals and two screw caps tightened. Burgess Battery Co., Freeport, Ill.

Valve-in-Head Engine for Construction Applications

A new valve-in-head compact four-cylinder V-type engine designed for general application in the construction field has been announced by Avco.

Designated as Model CV4-180, the engine delivers 70 hp at 3000 rpm, and is air cooled.

The engine weighs about 463 lb, less electric starter, generator and flywheel housing which are offered as optional equipment. Lycoming Div., Avco Mfg. Corp., Stratford, Conn.

Midget 4-Blade Power Trowel Floats and Trowels Non-Stop

A new small model 4-blade cement finishing machine—smallest in a line of three power trowels—has been announced by Superior. The "midget" weighs only 75 lb, its light weight making it suitable for equipment rental firms, smaller contractors. The machine is small enough to pass through narrow doorways and light enough for one man to carry up or down stairs.

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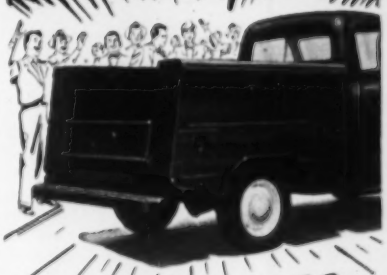
POWERS

Service-Master

THE ALL-PURPOSE SERVICE BODY



ACCLAIMED BEST

BY CONSTRUCTION EQUIPMENT MEN

Sales records prove that Service-Master is used by more service men than any other body. Service-Master makes work easier . . . saves more time . . . *builds greater profits!*

EXTRA FEATURES!

"Freeze-free" hinges that can't bind • Concealed fenders to protect compartment walls • "Hi-Lo" floor for easier loading • "No-Bounce" bins to keep parts in place • "Puddle-Proof" cargo area . . . and many other "extras".

OUTLASTS SEVERAL CHASSIS
Carried in stock in all 48 states by LOCAL Distributors!

FIND OUT FOR YOURSELF Prove to yourself that Service-Master gives you more for your money. Mail this coupon for complete details and price information today.

McCABE-POWERS AUTO BODY CO.
5900 N. BROADWAY • ST. LOUIS 15, MO.
625 CEDAR ST. • BERKELEY 10, CALIF.

Please send me complete details on
SERVICE-MASTER

Name _____

Company _____

Address _____

City & State _____

TZS

In Pasco, Washington, too— Clevelands do the digging

DISTRIBUTION SYSTEMS in Pasco and Kenewick, Washington, are being constructed for Cascade Natural Gas Company by A. J. Curtis Construction Company of Casper, Wyoming. Even in alleys and similar narrow rights of way, such as the 4-inch main installation shown, Curtis, cashing in on the compactness and maneuverability of his Cleveland trenchers, is averaging 1,650 feet of trench per 6-hour day.

Crowded cramped quarters or open fields, rocky soils or easy digging—Cleveland's original compactness, maneuverability, exclusive wide range of power and speed combinations and recognized quality construction are the reasons they dig *more trench . . . in more places . . . at less cost.* That's why you'll find Clevelands leading the way on gas work in the Pacific Northwest—as they have *everywhere* for over 30 years.

THE CLEVELAND TRENCHER CO.

20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

Good Everywhere

Publications

Steel stud—A newly-revised, 16-page catalog has recently been produced by The Bostwick Steel Lath Co. The revision centers around the new Chan-L-Form Stud now being manufactured by the company. This four-page section of the catalog covers elements of construction, weights, flexibility, job adjustments, sizes, framing of openings, ceiling attachment, and full page of architectural specifications concerning steel studding. The remainder of the catalog deals with all the rest of the Bostwick products and their accessories. THE BOSTWICK STEEL LATH CO., NILES, OHIO.

Materials handling trucks—Lewis-Shepard, Watertown, Mass., offers a 132-page catalog on its "Master Line" of materials handling trucks, which describes all models of L-S trucks available. The catalog is indexed into five categories, fork trucks, stackers, cranes, handlift trucks and floor trucks. The company also has recently released a 2-page circular that describes its 2,500-lb. Space-Master Model JFTT 2.5, designed for extreme heavy duty operation. LEWIS-SHEPARD, INC., WATERTOWN, MASS.

Lighting folder—A revised catalog folder describes new improved Turreter "Series 5" heavy-duty industrial fluorescent lighting fixtures. Contained are specifications, photometric data and other information. The Smitheraft Turreter "Series 5" is designed to meet a wide range of industrial needs with a minimum of glare because of its 10% uplighting features. SMITHCRAFT LIGHTING DIV., CHELSEA 50, MASS.

Watertight pipe joints—A new-type rubber joint for coupling small diameter concrete bell and spigot pipe is described in a 4-page illustrated brochure just released. The brochure gives engineering data, sketches and photographs illustrating the use of the joint. REXON "K" GASKETS, HAMILTON KENT MFG. CO., 427 W. GRANT ST., KENT, OHIO.

Electrified baseboard—A new eight-page circular entitled "2200 3-in-1 Plugmold Electrified Baseboard" illustrates and describes the advantages of the product from the point of view of architects, builders, electrical contractors, etc. and shows its applications in residential, commercial and industrial buildings where multiple electrical outlets and additional circuits are needed. Form 590. THE WIREMOLD CO., HARTFORD 10, CONN.

DELIVERING WATER CHEAPER

This 49½" OD Dresser-Coupled steel pipe line called for wall thicknesses ranging from ⅜" to 1" to withstand line pressures up to 650 psi. Notice how deflection of the pipe in the Dresser Couplings permits construction of long curves, using only straight sections.

Local workmen with no special training made bottle-tight joints with Dresser Couplings. Couplings were wrench-installed in an average of less than 25 minutes.

Steel Water Line Beats Rugged Terrain to Serve Progressive Caracas, Venezuela

Like hundreds of other fast-growing South American cities, Caracas, Venezuela, faced a serious water supply problem. The problem is being solved for years to come with a 17.4-mile Dresser-Coupled steel water line running from the Tuy River to the city's reservoir at Mariposa.

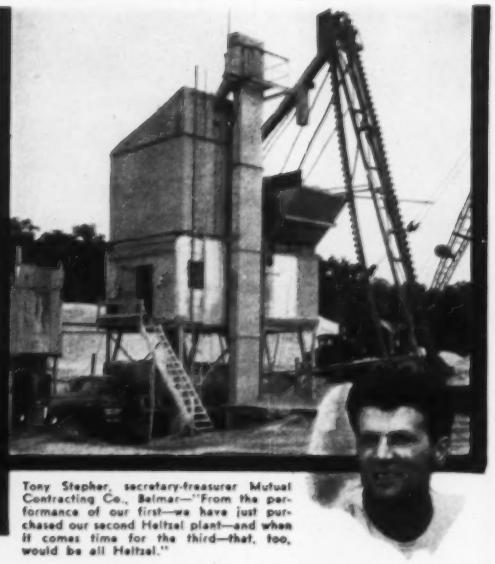
From the job specifications alone, an engineer can picture the sort of terrain the line passes through. Line pressures run as high as 650 psi. Backfill cover depth ranges from 5 to 25 feet. The line bridges 128 ravines. In some sections the terrain is so rugged that aerial tramways had to be used to transport and lay the pipe sections.

Dresser Couplings played a vital part in the success of this difficult project. Even though the contractor had no previous experience with Dresser Couplings, the line went in at the average rate of 32 lengths a day, with inexperienced local laborers making bottle-tight joints. The deflection of pipe possible with Dresser Couplings was an invaluable advantage in the laying of curves. The high beam strength of steel pipe assured safe ravine crossings with a minimum of structural support.

This project is typical of the sort of foresighted engineering that is building great cities in South America today. Steel pipe and Dresser Couplings are the ideal combination for rugged terrain, and they assure a bottle-tight, trouble-free line that *delivers water cheaper* for generations to come. Dresser Manufacturing Division, Bradford, Pa.

ONE OF THE DRESSER INDUSTRIES

Conrad G. Seebolt, vice president of Seebolt, Inc., South River and Red Bank, says, "We specified a second Heltzel plant on the strength of performance of our first. I feel re-ordering to be the strongest kind of recommendation!"



Tony Stephor, secretary-treasurer Mutual Contracting Co., Belmar—"From the performance of our first—we have just purchased our second Heltzel plant—and when it comes time for the third—that, too, would be all Heltzel."

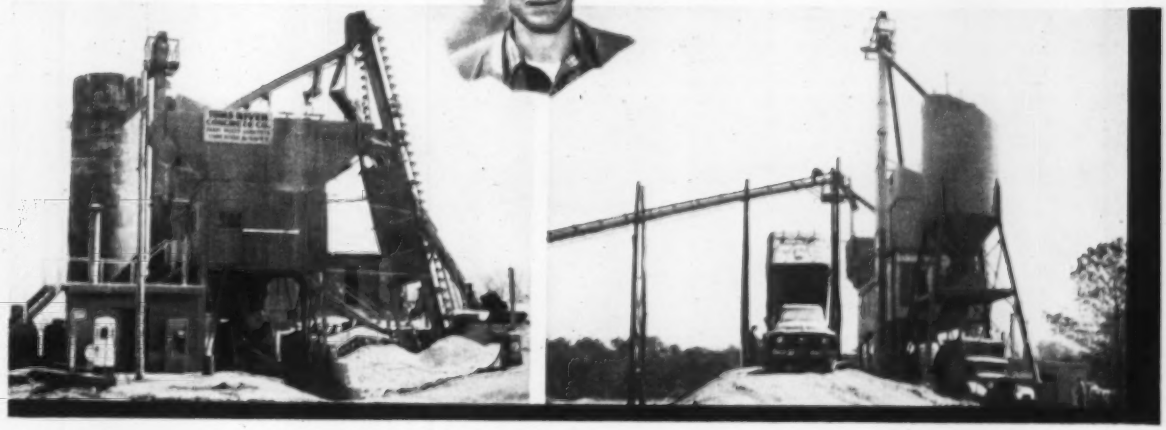
In New Jersey too, HELTZEL

Mr. Walter Cortlar, owner Allied Transit Mix Corp., Freehold—"We are thoroughly satisfied with the Heltzel plant! We wish to further state that recently a nationally known firm of consulting engineers made a plant survey and reported that it is one of the best layed out plants they surveyed in the last few years."

Says Mr. Harold Collins of Collins Brothers, Inc., Keansburg—"We're extremely satisfied with our Heltzel Batchmaster®. I've just installed my second plant and if it's anything like the first, I'll be more than happy."

Ted Farrell, manager Monmouth Lumber and Concrete, Deal—"We operate other makes, but this new Heltzel has them all beat for speed and accuracy. We are Batchmaster® boosters from now on."

Christian Fisher, partner in Toms River Concrete Co., and Ocean Concrete Co., Manahawkin, reports, "My partner and I feel equipment is the keynote to success. We want the finest obtainable, and that's why we selected Heltzel."



stands out!

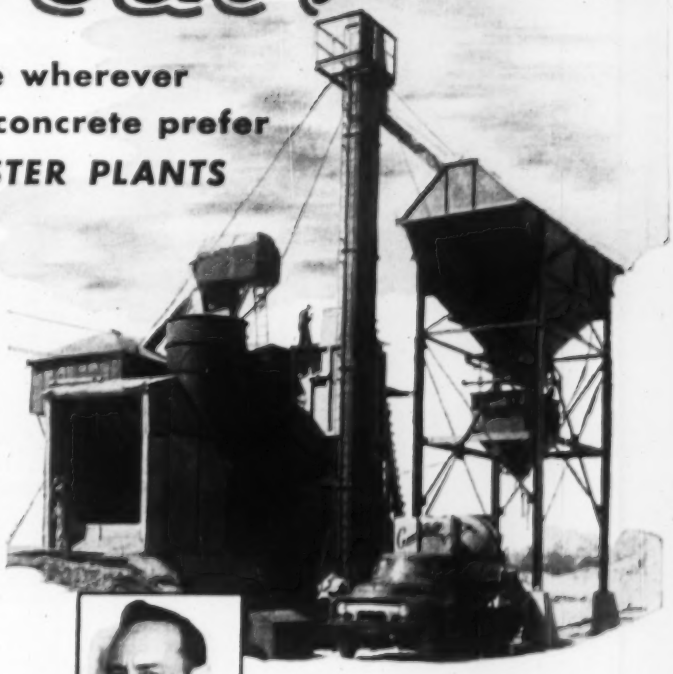
The story's the same wherever you go. Men who know concrete prefer *HELTZEL BATCHMASTER PLANTS*

The eight Heltzel Batchmaster Plants pictured on these pages are grouped within a few miles of each other along the North Jersey Shore, furnishing contractors of that area with all their concrete requirements. This concentration of Heltzel equipment is typical throughout the nation, for these fast, accurate, profit-producing plants have a universal appeal for those who know concrete.

There are dozens more of these plants in New Jersey, and hundreds of them spread throughout the 48 states, each providing its owner with efficient, trouble-free batching.

There's a reason for this leadership. Heltzel has been building concrete handling, forming and spreading equipment for almost 50 years. They know the industry and its needs. They have the background necessary to assure the finest in practical engineering, dependable products and quick service.

When next you're in the market for batching equipment, remember it costs no more to have the finest — that's a Heltzel Batchmaster* Plant!

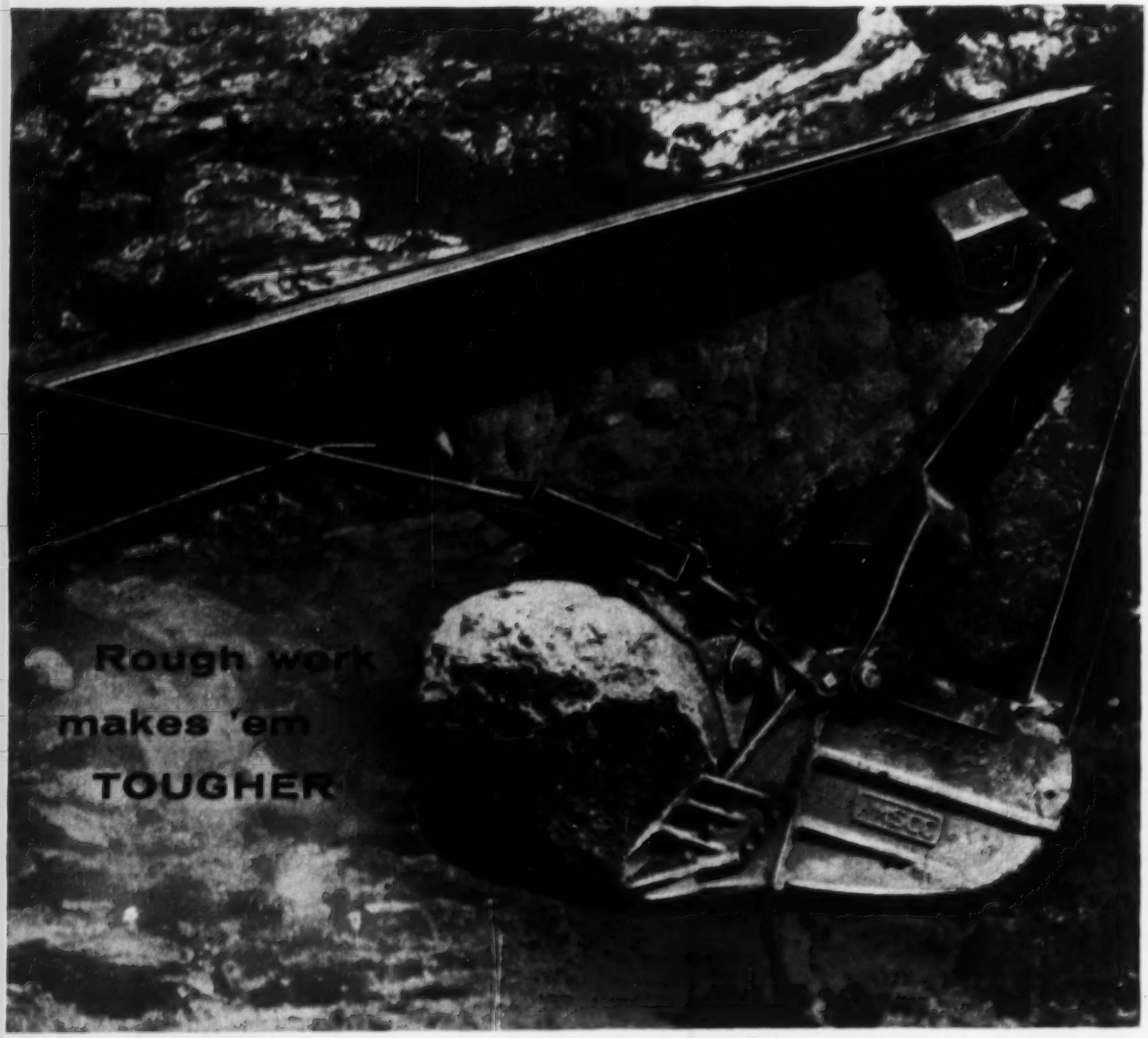


At Wayside, New Jersey, Duncan Thacher, owner of Campbell Concrete Co., says, "We looked them all over, and talked with a lot of people before we made our selection. I'd say we have the finest equipment possible in our new Heltzel Batchmaster*".

*T.M.

THE HELTZEL STEEL FORM AND IRON COMPANY
89807 THOMAS ROAD
WARREN, OHIO

10019



Amsco Backhoe Buckets **WORK-HARDEN IN SERVICE**

One-piece castings of extra-tough manganese steel give maximum impact and abrasion resistance.

Impact work-hardens manganese steel to as high as 550 BHN. Further abrasion only polishes this tough steel. That's why Amsco® manganese steel outlasts other steels by as much as ten to one, under heavy impact and abrasion.

An Amsco Backhoe Bucket is a tough, *one-piece* manganese steel casting. This one-piece body eliminates the danger which fabricated-bucket users face of the hoe bucket breaking up when digging in rock or rough operations. The teeth on Amsco hoe buckets are reversible and renewable, and side cutters can be bolted on to order.

On scores of tough digging jobs, you'll find these Amsco buckets cutting a full swath, unloading cleanly and providing maximum digging efficiency.

Available in both standard and special styles, in all regular sizes from ⅜-yard to 1½-yard capacity. For full information, call your nearby Amsco representative or your shovel manufacturer's dealer.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS, JOLIETTE, QUEBEC

1. Basic Step—Coarse granular sub-base has been shot with 85/100 asphalt cement, and compacted, after old paving is removed.

2. First Course—Steel-tired roller compacts 1-in. leveling course of asphaltic concrete. Wire fabric sheets, at side, will be placed on this course.

3. Final Step—Two-inch asphaltic concrete binder course has been placed over fabric and is ready for bus use. Fabric is lapped for continuity.

Fabric Added to Bus-Stop Pad

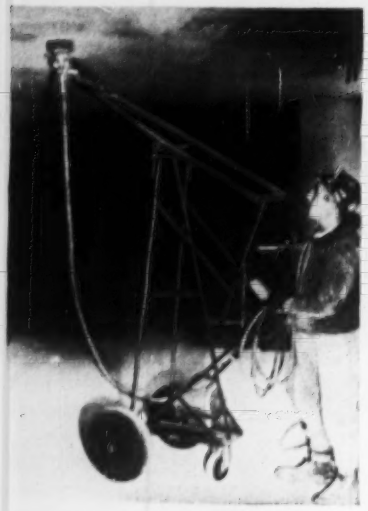
Encouraged by the success of a test installation, the Port of New York Authority has recently completed resurfacing of the heavily traveled north passenger bus stop on the George Washington Bridge. A 50-ft test section, put down in October 1954, proved satisfactory under more than 500 bus loadings daily and, according to PNYA officials showed little or no rutting, rippling or shoving that has been apparent in unreinforced areas.

As a result, resurfacing of the entire 5,100-sq-yd area of the stop was undertaken during the summer as part of a general maintenance and repair program. The $28,297 contract (including curb removal) was awarded to Anthony Grace & Sons, New York City.

Job reports indicate that cost of asphalt in place was about 55 per sq yd, cost of the 3 x 6-10/10 fabric was about 40 cents per sq yd.

(*F & O continued on page 92*)

RUBBING CEILINGS?



Do it

G *with a*

I R A F F E

CEILING GRINDER

- **FASTER AND EASIER:** One man will average almost 4000 sq. ft. per day. Does not need scaffolding.
- **CHEAPER AND BETTER:** Money saved on finishing will help pay for grinding.
- **DEPENDABLE:** Individual GIRAFFES have worked more than 1,000,000 square feet without major overhaul.

GIRAFFE®

Heights up to 24 ft.

Has been adapted to cleaning ceilings.

CONCRETE GRINDING CORP.
300 STRAIGHT ST. PATERSON, N. J.

Asphalt Cap Solves Seawall Problem

Placement of an asphaltic stabilization cap apparently has solved a tough seawall repair problem at the Seattle (Washington) Army Terminal.

The original seawall was a 30-year-old two-step bulkhead of piling and gunite coated planks. Erosion and the pounding of waterborne debris had broken the rigid capping and allowed water to tear away the supporting riprap fill. The cavities thus created resulted in ever increasing settlement of the cap, and the excessive deterioration of the planking permitted water to enter the terminal's boiler room.

The repair problem was compounded by the fact that the seawall is completely covered by decking and pier structures—all in good shape—limiting headroom and access. With as little as 3 ft of clearance in some areas, use of equipment was out of the question.

Because of its flexibility, durability, and adaptability to manual application, asphalt was selected as the capping material.

The job involved the repair of 1,000 ft of seawall. Washed out riprap was replaced by 626 tons of rock, in stones ranging in weight from 20 to 225 lb. Voids were filled with 390 tons of spalls. A trench was left at the base of the slope to accommodate 18 in. of asphalt. On the rest of the slope, the asphalt cap was held to a thickness of 4 in.

The contractor used 379 tons of 85/100 penetration asphalt which, in loads of 7 to 8 tons, was dumped on the deck, and shoveled to men below. In spite of manual placement and interference from tides (work could be done only at low water) aggregate application averaged 40 tons per eight hour day.

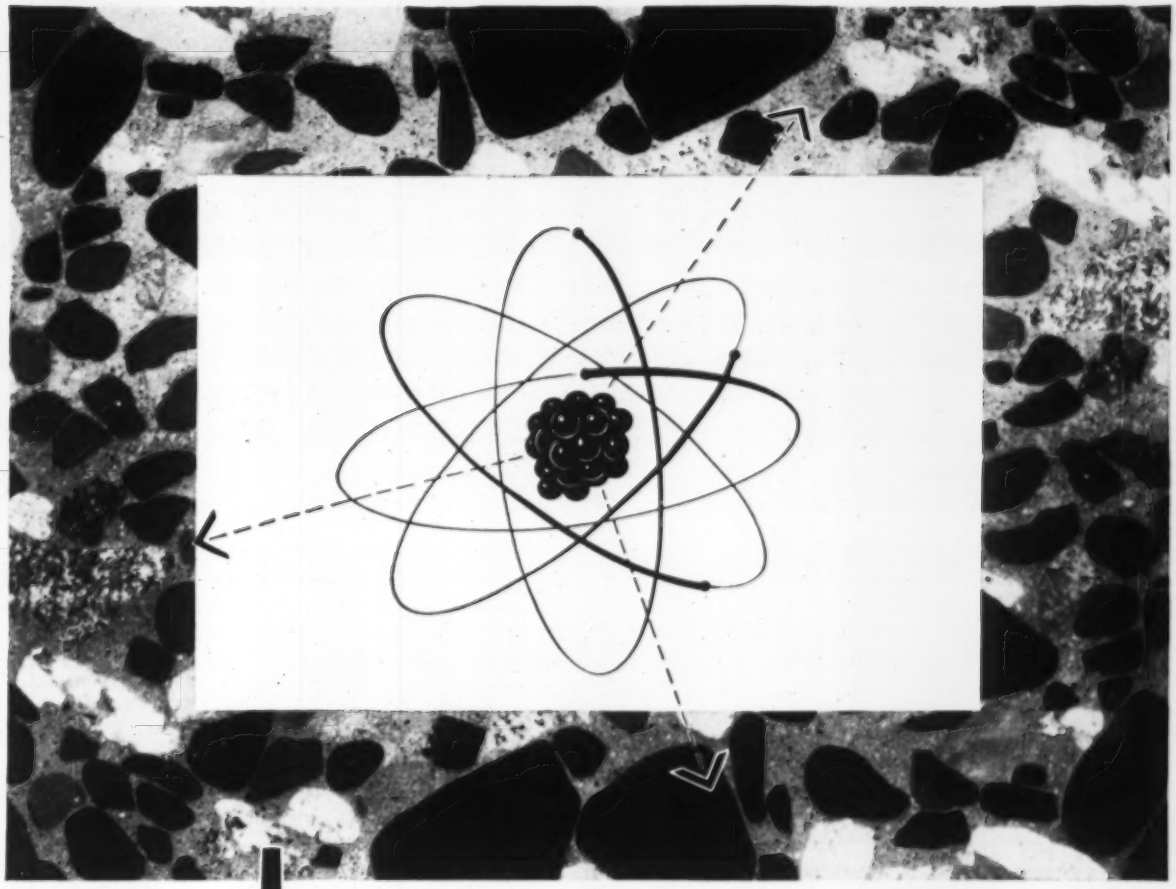
The job was done by Larsen Construction Co. of Seattle under the direction of Stanley Nelson, principal engineer for the army terminal.

Novel Pile-Driving Method Expands Base, Shrinks Cost

To lick the foundation problems posed by sandy soil and a high water table on a building site in Jacksonville, Fla., builder E. C. Kenyon adopted a novel method of pile driving devised by John Gravely, Jacksonville architect. He sank short casings, scooped out a wide cavity below the lower end of each and after placing the mix forced it to expand under pressure against the sand walls of the cavity. The method cost 75% less than conventional foundation construction.

The building is a one-story, 5,200-sq-ft rigid-steel-frame structure supported by 52 piles. Pile diameters vary from 18 in. to 24 in. at the top, 33 in. to 42 in. at the bottom. All penetrate at least 4½ ft below ground level.

The builder first dewatered the ground. Then, with the base of a cylinder set 3 ft deep (or below water level), a workman hollowed out the cavity below it with a posthole auger held at an angle. Cavity and casing were then filled with concrete and a 6-in. wood block floated on top of the wet mix. A series of blows on the block from a 500-lb hammer, forced the concrete to expand against the cavity walls, compacting the sand and enlarging the opening.



"heavy" concrete for reactor shields

High-density concrete, an efficient and practical radiation shielding material, is destined for wide use in nuclear reactors.

The high density results from the use of heavyweight aggregates and affords 1½ to 2 times more radiation protection than normal weight concrete of equal thickness. Its higher unit cost is offset by overall cost savings, which on one project amounted to $7,000,000!

INTRUSION-PREPAKT materials and methods are a proved solution for placing high-density concrete in massive, complex shields having a maze of obstructions. High-density aggregates are carefully preplaced to assure uniform density without segregation. Consolidation with INTRUSION mortar produces a PREPAKT concrete structure free of radiation leaks. Densities to 300 lbs./cu. ft. and over can be achieved, usually at less cost than by conventional methods.

INTRUSION-PREPAKT experience in placing high-density concrete reactor shields qualifies it as the top organization to work with on such projects. You will deal with a firm that *specializes* in concrete construction and maintenance, *has* a complete field construction group and *offers* an engineering design service. For information, write: INTRUSION-PREPAKT, Inc., Room 779-O, Union Commerce Bldg., Cleveland 14, Ohio. In Canada: INTRUSION-PREPAKT, Ltd., 159 Bay St., Toronto, Ontario.

A new technical bulletin on "High-Density PREPAKT Concrete" is now in preparation. We will be glad to send you a copy. Send a request on your letterhead, please.

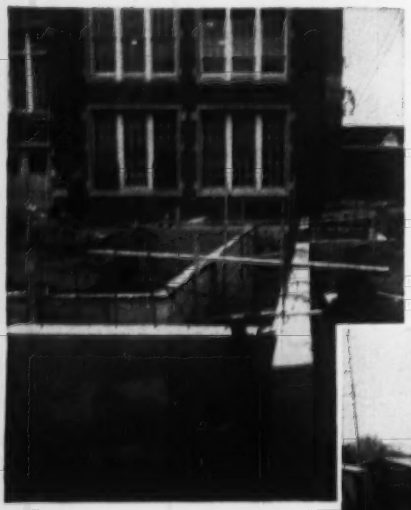
INTRUSION-PREPAKT, INC.

OFFICES IN PRINCIPAL U.S. AND FOREIGN CITIES

Intrusion and Prepakt are trade marks of Intrusion-Prepakt, Inc., whose methods and materials are covered by U. S. Patents Nos. 2313110, 2655034, 2434302 and others, also patents pending.

How to make a school foundation
water repellent, sturdy and *long lasting*

THOROSEAL
Foundation Coating



Correct procedure is shown here, where foundation is given 2 brush coats of THOROSEAL Foundation Coating, immediately after construction forms are removed.

Poured concrete exterior walls and tunnel walls, 2 coats of Foundation Coating, and inside concrete block walls, 2 coats of THOROSEAL

Bagley School
Pontiac, Michigan
Architect—William Zimmerman
Contractor—Nolan Gottschall

NO MAINTENANCE COST HERE!

THOROSEALING the foundation walls of this new school building, means less upkeep, less repairs. Water cannot penetrate masonry now and cause costly damage.

Get our pictorially described literature
"HOW TO DO IT"
STANDARD DRY WALL PRODUCTS INC.
NEW EAGLE, PENNSYLVANIA

Obituaries

C. B. Williams, 54, vice president of Morrison-Knudsen Co., Inc., Boise, Idaho, died at Boise, August 4.

Mr. Williams worked as field supervisor or directly managed the building of 25 dam and tunnel projects during his 32 years with Morrison-Knudsen. At the time of his death, he was concerned with construction of Brownlee and Oxbow dams for Idaho Power Co. in Hells Canyon; Table Rock Dam in Missouri; Donnells Dam in California and Noxon Rapids Dam in Montana. He also was advisor for the company on Seyhan Dam in Turkey and a river development project in Iran.

He was credited with development of the jumbo for use in tunnel drilling; an overhead loading machine for removal of tunnel muck; and he contributed improvements to aerial cableways for placing concrete on big dams, and to a concrete batching system.

Clarence McDonough, 66, president and director of The Foundation Company, died in New York City on Sept. 19. A native of Gloversville, N. Y., he attended Cornell University and was graduated in 1912 from M.I.T. He joined The Foundation Company in 1913 and became district manager for the Pittsburg area. From 1926 to 1930 he was chief engineer in charge of foreign activities of the company.

Mr. McDonough was for two years director of engineering for the Public Works Administration and later served as general manager and chief engineer for the Lower Colorado River authority. In the latter capacity he had charge of construction of Buchanan, Inks, Mansfield, and Austin dams. He spent several years with the H. K. Ferguson Company before rejoining The Foundation Company in 1943. He became president of the firm three years ago.

Philip J. Gray, 67, died in April in Lake Worth, Fla. A 1912 graduate of Cooper Union, in New York City, Mr. Gray spent many years in heavy construction engineering, including erection of Hell Gate Bridge in Connecticut, the foundation of New York City Municipal Building, and the St. Lucie locks on the St. Lucie River.

William Murray Lybrook, 58, director of public service at Greensboro, N. C., died Sept. 10. A graduate of Virginia Polytechnic Institute in 1921, he had been with the City of Greensboro since October, 1927. He was promoted to superintendent of water and sewer plants in 1937 and was elevated to director of public service 10 years later.

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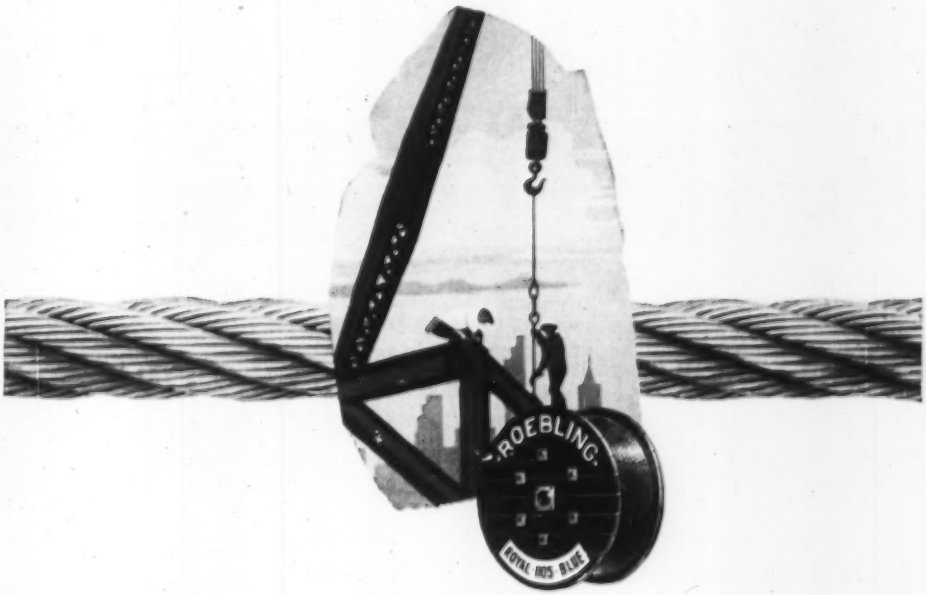

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The therapeutic value of sunshine and view had much to do in guiding Pereira & Luckman, planners, architects and engineers of Los Angeles and New York City, in designing the Grossmont District Hospital. To give patients a better outlook they made the whole side of each room into a wall of glass—a picture window bringing in sunshine and acres of view.

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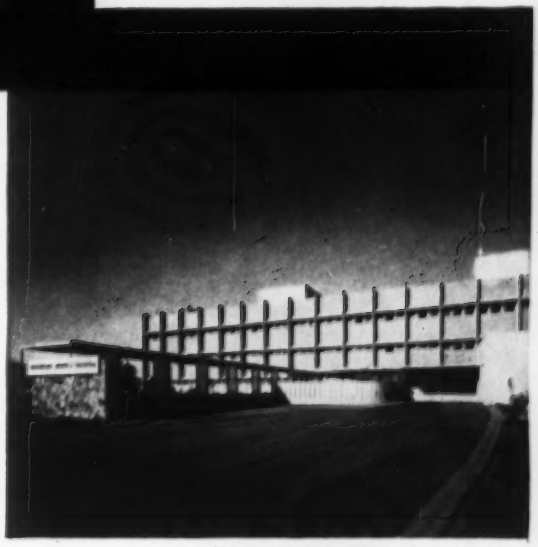
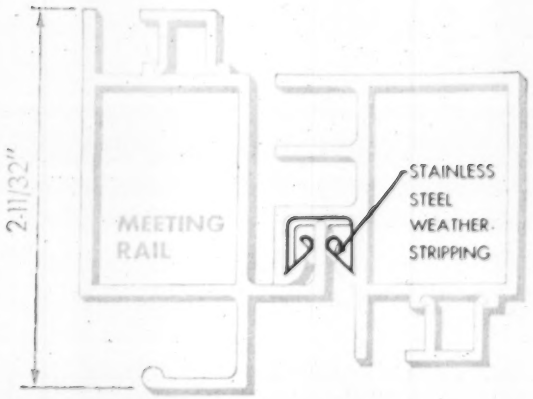
Front elevation of Grossmont District Hospital, San Diego, California presents interesting pattern of light and shade, with Ceco-Sterling Aluminum Double-Hung and Fixed Windows and Screens providing echo accents for the main motif. Pereira & Luckman, planners, architects and engineers.

There's minimum air infiltration with the use of Ceco-Sterling Double-Hung Monumental and Commercial Windows, Series 200-B. That's because the sash float on stainless steel weather stripping, assuring tight, freely operating, vertical sliding windows. They operate silently, so necessary in hospital windows.



The sweep and pattern of the window treatment lend stately drama to Grossmont. Visors over the windows and right-angle fins control glare while admitting abundant light.



Note the heavy extruded box sections for rugged performance, and the double-contact stainless steel weather stripping for tightness. Similar weather strip at jambs provides a spring cushion contact, holds sash clear of frame for easy sliding.

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A Contract May Require Compulsory Arbitration

All disputes within the scope of an arbitration clause must be settled by arbitration if either party to the contract insists upon it.

The following case shows some of the difficulties that may be met:

The owner, the Board of Education of the Town of Bath, New York, entered into a contract with two architectural firms in connection with the construction of school buildings. The contract between the owner and the architects contained the following provision: "12. Arbitration. All questions in dispute under this agreement shall be submitted to arbitration at the choice of either party." On the day the contract between the owner and the architects was entered into, the two architects entered into a contract of their own in reference to the work to be done, and this contract incorporated by reference the provisions of the contract between the owner and the architects.

Under the terms of the contract between the architects, one of them (Ervay J. Baker) was responsible for the issuance to the contractor of the supervision of construction and certificates entitling the contractor to interim payments. During the course of construction, Baker, believing that the payment of a requisition of $81,000 would amount to a total payment in excess of the contractor's cost up to that time and might enable the contractor to avoid the completion of the unfinished work within the contract price, notified the contractor that he required a justification of the requisition before he would approve the payment. The contractor notified the board and Baker of his intention to terminate the contract, and ceased work. Then the board negotiated a settlement with the contractor without consulting Baker or considering the data Baker had assembled, justifying, in his opinion, the refusal to certify the payment. The board then discharged Baker and this architect did not receive any subsequent compensation.

Baker filed claims against the board of education, one for the fees due to the associated architects and the second for Baker's share of the fees paid to the associated architects plus his disbursements, the second claim being founded on the theory of the board's liability arising from the board's action in compeling the other architect to sever his relation with him. Upon rejection of the claims, Baker requested the other architect and the board of education to arbitrate the dispute. The other architect and the board of education made an application to the court to issue an order staying the arbitration and such an order was granted. Baker then appealed to the Appellate Division which affirmed the determination of the lower court. Baker then appealed to the Court of Appeals which reversed the order of the lower courts and held that the matters in dispute under the terms of the contract were matters that should be determined by arbitration.[1]

The Court of Appeals made this observation: "It is our view that a bona fide dispute exists which must be arbitrated pursuant to clause 12 of the contract. Any differences between Baker and his associate architect, 'White and Helm,' arose out of the performance on his part of his duties under the contract. The dispute, therefore, is between Baker and the board as to the propriety of their respective acts. Since the disputes are within the scope of the arbitration clause, they must be settled by arbitration, if demanded by either party."

[1] Arbitration Between Baker and Board of Education of Central School District of Bath, 132 N. E. 2d 837, N. Y. Court of Appeals, Feb. 16, 1956.

Federal Anti-Kickback Law And Government Contracts

Agreements to pay consideration for getting a government contract are void. Under the Anti-Kickback Act, the government can recover the amount paid from the person who gave the bribe.

Here's how it worked in one case:

The Fisher Body Division of General Motors Corporation employed a supervisor who had authority to award subcontracts for the making of blueprints in connection with work Fisher was doing for the United States Government. The supervisor did not establish the contract price, but merely awarded subcontracts at a price predetermined by his superiors to subcontractors who had the available time and facilities for making blueprints. He was also limited in his choice to a list of qualified subcontractors prepared by his superiors.

One of the qualified subcontractors on the list had previously been engaged in blueprint subcontract work for Fisher. Not having recently re-

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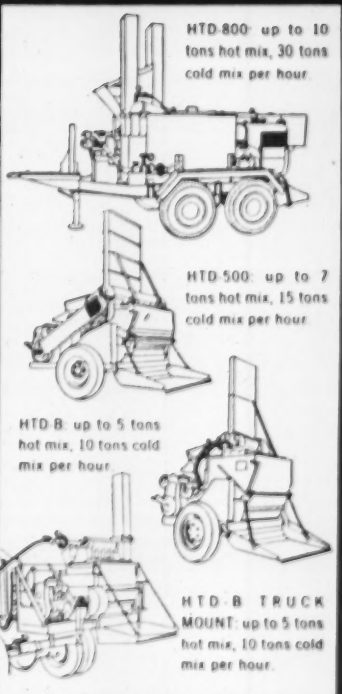
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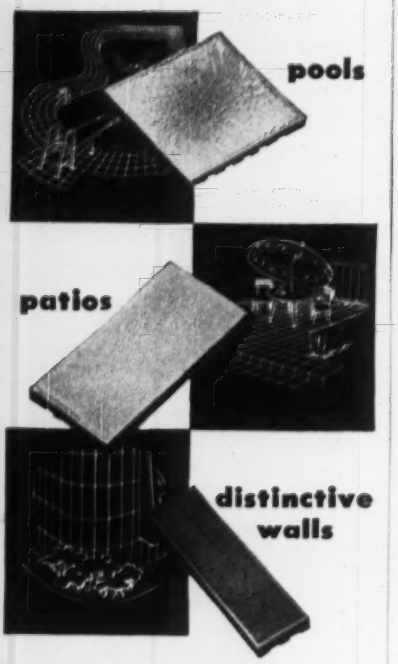

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ceived any subcontracts from Fisher, it contacted the supervisor who informed him not to expect any more orders for blueprints unless he shared his profits with the supervisor. The subcontractor agreed to do this and thereafter received orders from Fisher. The supervisor was paid $27,425 as his share of the profits.

The Government brought an action under the Anti-Kickback Act to recover the amount paid to the supervisor. The evidence produced at the trial showed that the subcontractor did not charge Fisher any more for the blueprints than it had charged before it made any kickbacks. The Government obtained a judgment for the full amount of the kickbacks paid.[1]

The court stated: "It has long been held that contracts for the payment of commissions for securing Government contracts or congressional favors which have a tendency to corrupt are void as against public policy. * * * The kickbacks paid to Brune (the supervisor) definitely had a tendency to corrupt him for the continued awarding of blueprint orders to the defendants who conditioned upon the payment of kickbacks to him and did influence his choice of subcontractors."

The action was brought against the subcontractor who furnished the blueprints and the court held that the Government could recover the amount paid to the supervisor even in the absence of proof of pecuniary loss on the theory that the subcontractor would have furnished the blueprints at a lower price if he had not paid bribes to get the contract.

[1] United States v. Davis, 136 F. Supp. 423, U. S. District Court, Dec. 30, 1955.

Acceptance of Building As a Waiver of Defects

When a purchaser buys a house from a builder, does his acceptance of the deed release the builder from liability for defects later discovered?

As the following case illustrates, the answer depends upon how the contract of sales is worded and whether the builder has misled the purchaser. These were the circumstances:

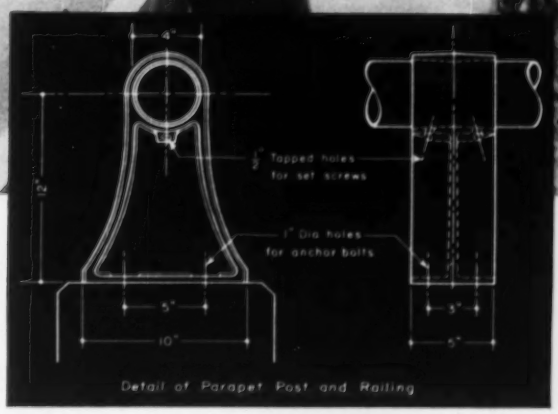
The purchaser of a building brought an action against the seller (who was also the builder) to recover damages for defects in a building. The action was predicated on two claims: first, that the purchaser was induced to enter into the contract for the purchase of the property as a result of fraudulent misrepresentation in an advertisement inserted in a New York paper; and second, on the ground that the building as constructed was defective and the purchaser was entitled to recover damages for breach of contract.

The seller asked the court to dismiss the action or to require that the pleadings be made more definite and certain. His reasons were these: First, that the purchase contract expressly provided that the written contract stated the entire agreement between the parties and relieves the seller from being bound by any stipulations, representations, agreements or promises, oral or otherwise, not printed or inserted in the written contract; and second, that the written contract provided that acceptance and delivery of the closing deed shall constitute full compliance by the seller with the terms of the contract on its part to be performed except as to matters which are specifically made to survive the title closing.

The court dismissed the action to the extent that the sale was based on fraudulent misrepresentations, the court holding that the contract barred the right to such action. As to the claim that the house was not properly built, the court held that the pleadings were too vague to show that the claimed defects came into the category of the exceptions set forth in the contract that were to survive the acceptance of the deed, and permitted the purchaser to serve an amended complaint to show that the defects in question came within the exceptions set forth in the contract.[1]

The court stated: "It is well established that every contract implies good faith and fair dealing between the parties. M. O'Neil Supply Co. v. Petroleum Heat & Power Co., 280 N.Y. 508, 19 N.E. 2d 676. A corollary of this principle is the doctrine that in every contract there is an implied covenant that neither party will do anything having the effect of destroying or injuring the right of the other party to receive the fruits of the contract. Halstead v. General Ry. Signal Co., Sup., 51 N.Y.S. 2nd 372, affirmed 268 App. Div. 1060, 52 N.Y.S. 2d 660. Thus, there was an implied term of the agreement here that the house would be constructed in a good and workmanlike manner in addition to the express covenants that the work and materials would comply with the requirements of the municipality having jurisdiction and those of the lending institutions making the mortgage loan. If the house did not meet such standards, then, in the absence of other contract provisions barring relief to the purchaser,

Beesleys Point, N. J. Bridge on Garden State Parkway.
Contractor and Erector: Ole Hansen.



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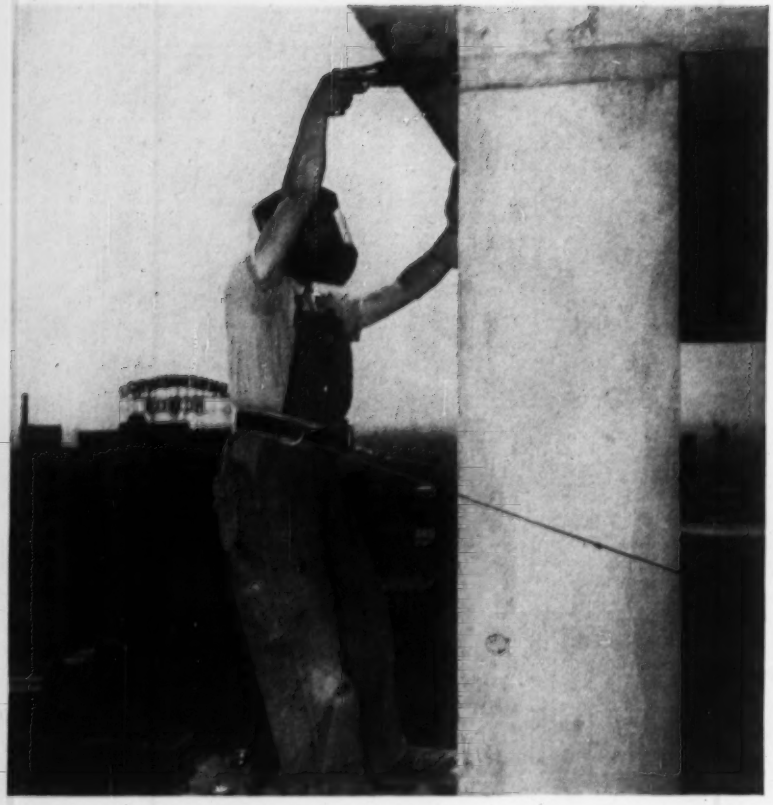

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he would have an actionable claim for breach of contract." The court indicated, however, that where as in the instant case, the contract specifically provided that the acceptance and delivery of the deed shall be deemed to constitute full compliance by the seller as to certain matters stipulated in the contract, no right of action exists except as to matters that the contract stipulated would survive the acceptance of the deed.

As to the court's decision that the action couldn't be maintained on the grounds of fraudulent misrepresentations because of the fact that the contract contained a provision to the effect that it would not be liable for such misrepresentations, the writer desires to call attention to the case of Jackson v. State, 210 App. Div. 115, affirmed by the Court of Appeals (241 N.Y. 563). There the court stated: "A party to a contract cannot by misrepresentation of a material fact, induce the other party to the contract to enter into it to his damage, and then protect himself from the legal effect of such misrepresentation by inserting in the contract a clause to the effect that he is not to be held liable for the misrepresentation which induced the other party to enter into the contract. The effect of misrepresentation and fraud cannot be thus easily avoided. If it could be, the implied covenant of good faith and fair dealing existing in every contract would cease to exist."

[1] Lutz v. Bayberry Huntington, Inc., 148 N.Y.S. 2d 762, N.Y. Supreme Court, Nassau County, Jan. 16, 1956.

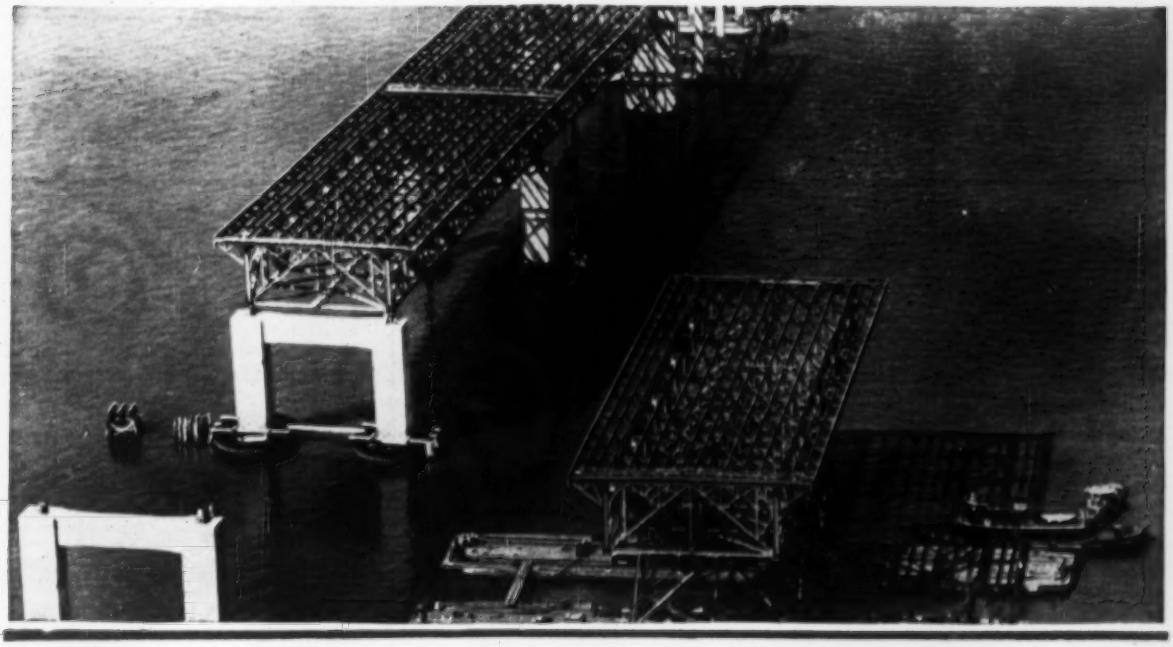
Right to Withdraw Bids After Errors Discovered

In some states, a contractor who discovers an error in a bid after it has been submitted may be able to get the contract rescinded.

In Georgia, for example, the Housing Authority of the City of Hazelhurst advertised for bids for the construction of two housing projects. The terms set forth in the invitation to bidders provided that "No bid shall be withdrawn for a period of thirty (30) days subsequent to the opening of bids without the written consent of the Housing Authority of the City of Hazelhurst, Georgia."

The low bid was submitted by H. W. Ivey and was in the amount of $463,733. It was accepted subject to the approval of the Public Housing Administration.

A representative of Ivey was present when the bids were opened and when the motion conditionally accepting the



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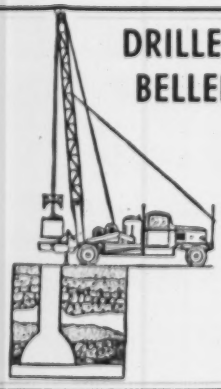

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bid was adopted. That night Ivey found an error in the computation on which his bid was based in that subcontract bids aggregating $34,822 were not carried into or reckoned as a part of the bid figure. On the following day, Ivey sent the Authority a telegram, which was confirmed by letter, advising it of the error and the withdrawing of his bid. About three weeks later, the Public Housing Administration approved the acceptance of the Ivey bid and the Authority tendered him a written contract in the amount of his bid. Ivey declined to execute the contract and the Authority then entered into a contract with the next lower bidder. The Authority then brought an action against Ivey's surety to recover the sum of $14,267, being the difference between the two bids.

The Authority obtained a judgment at the trial but this judgment was reversed on appeal,[1] the appellate court holding that under Georgia law, where there is some reasonable excuse for an error made in calculating a bid, and the party receiving the bid knows of the mistake at the time the bid is accepted, the contractor may have the bid rescinded in equity.

(1) Peerless Casualty Co. v. Housing Authority, 228 F. 2nd 376, U. S. Court of Appeals, Dec. 16, 1955.

Uncertainty of Damages Is No Bar to Recovery

"Recovery of damages cannot be had if there is uncertainty as to whether the rights of the complainant have been invaded. But damages may be awarded where there is no uncertainty as to whether the rights of plaintiff were invaded, even though there may be some uncertainty respecting the amount of damages sustained. It is not essential that the amount be proved with absolute certainty. It is enough if the evidence adduced is sufficient to enable the court or jury, as the case may be, to make a fair and reasonable approximation."[1]

In most cases where actions are brought to recover damages for breach of construction contracts, especially in cases where the contractor has wrongfully been prevented from performance, it is necessary to prove damages by the testimony of experts.

[1] Stern v. Dunlap Company, 228 F. 2d 939, U. S. Court of Appeals, Dec. 27, 1955.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

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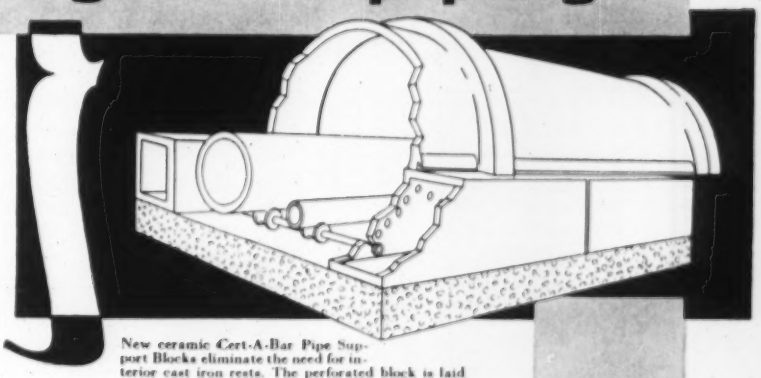

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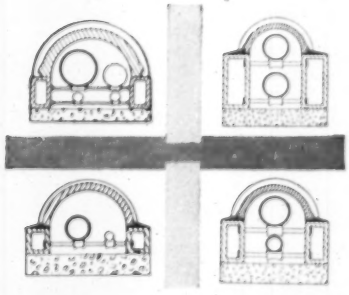
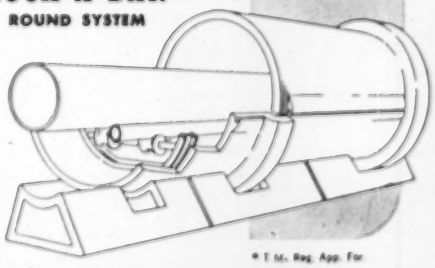
THE vital consideration in selecting an underground conduit system is *permanent* protection . . . not for one year or five, *but for the life of the piping.* You get the best possible protection for your underground metal service piping with a Stillwater Conduit System of vitrified clay. It's chemically inert—can't rust, rot, corrode, or decay . . . ever. And it is manufactured in accordance with ASTM specification C-13-54, assuring proper strength and quality. Any combination of service piping can be protected. Conduit is available in a wide range of sizes, with a complete line of fittings and accessories, including alignment guides, lateral guides, and anchors. Any contractor's crew can handle the installation easily, or if you prefer, Stillwater Licensed Installers will assume the responsibility. The Cert-A-Bar Tunnel System can be installed with any of three suggested new waterproofing specifications—one for average conditions, one for intermittent ground water conditions, and a third for high water table conditions. It's the lowest-cost conduit per year of service that you can specify or install!



A few of the hundreds of possible combinations of piping for the Cert-A-Bar Tunnel System are shown at left. At right is the Lock-A-Bar Round System, used largely for short runs and replacement of other conduit.

LOCK-A-BAR*
ROUND SYSTEM



* T. M. Reg. App. For Patents Pending.

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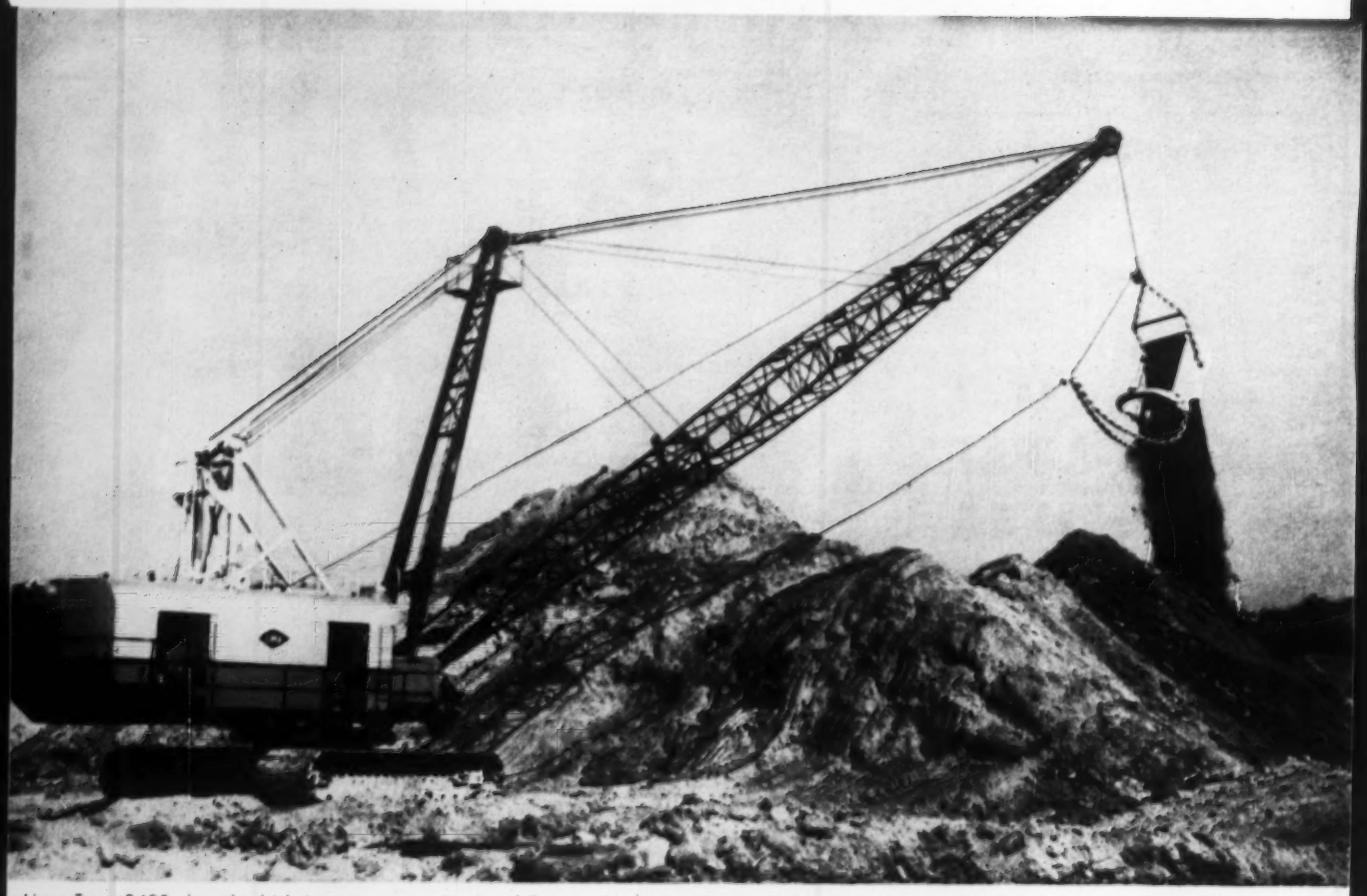
STILLWATER CONDUIT DIVISION
3334A PROSPECT AVENUE, CLEVELAND 15, OHIO

STILLWATER CONDUIT SYSTEMS

SW 956 70



Lima Type 2400 shovel which incorporates a National Torque Converter. Here it is shown in use as a dragline with a 120-foot boom.

Where can you use NATIONAL Torque Converters?

National Torque Converters were developed specifically for the toughest, roughest industrial service. They are designed to provide a high degree of flexibility in operation of such equipment as power shovels, drag-lines, cranes, graders, shovel loaders, drilling rigs, mining and logging equipment.

In starting to move or lift a heavy load, a National Torque Converter acts as an automatic stepless transmission. Starts are smoother, easier . . . and acceleration of the load is faster. Result: more work per unit per operator per day.

Equipment is easier to operate and can be controlled more precisely. And there is less likelihood of overloading an engine or motor, or stalling it.

National Torque Converters are available in 6 basic hydraulic circuit sizes, each with a range of input ratings, permitting exact matching of torque converter to specific power-speed characteristics of a prime-mover. Precision fabrication of parts made to close tolerances assures uniform efficiency in operation, permitting standardization on your equipment.

Experienced National engineers are prepared to work with you on matching the right National Torque Converter to your requirements.

THE NATIONAL SUPPLY COMPANY

INDUSTRIAL PRODUCTS DIVISION

Two Gateway Center, Pittsburgh 22, Pa.

Pace-setters in the progress of industrial power transmission

New Bids on Chicago Toll Bridge are up 3.45%

Unit prices bid July 11 on the substructure of Calumet Skyway differ widely from rejected bids taken on April 30. Except for different piling, steel H-piles in the new and cast-in-place concrete in the rejected bids, all items and estimated quantities were identical. Both low bids on the substructure came from the same contractor. The superstructure contract was let on April 23. Chicago Department of Public Works, George L. DeMent, Commissioner, let both contracts for a total of $7,748,605.

This six-lane steel and reinforced concrete bridge over Calumet River in Chicago is 2,460 lin ft long. It includes three cantilever spans of 325 ft, 650 ft and 325 ft, approach deck-truss spans, steel towers and bents. The deck will be concrete with bituminous surfacing.

The $6,835,170 contract for the superstructure went to American Bridge Division of the U. S. Steel Corp. This was 10% above the engineer's estimate but 5.45% below the second low of four bids. The contract calls for 17.8 million lb of structural steel, cast and wrought iron drain pipe plus electrical facilities and navigation lights. Work under this contract must be completed in 575 calendar days, with $2,000 per day as bonus for earlier completion or as penalties for delays.

E. J. Albrecht Co., Chicago, will build the substructure for $913,435, 0.16% below the second low and 23.2% below the high seventh bid. This is 3.45% above the rejected low bid based on cast-in-place concrete piles. Completion time is 350 days with $275 penalty per day.

Excavation bid prices are higher, especially for piers which now cost $50 per cu yd compared to only $4 in April. Prices are up also for steel sheet piles 10%, carbon steel 6% and for stone fill 16.5%. But they are lower 12.5% to 54% for concrete in tremie seals, piers and fenders and 33.3% for structural steel erection. Reinforcing steel remains the same. The H-steel piling costs 17.85% more than the rejected cast-in-place concrete.

A threatened shortage of H-steel piles in April caused the city to revise plans in favor of cast-in-place concrete. However, when bids were received April 30, steel piles were available again, and bids were rejected to be advertised again for steel piles, July 11.

Chicago wage rates for unskilled labor were $2.575 until June when they were increased to $2.65. Wages for skilled labor jumped from $3.50 to $3.55 in June and to $3.592 in July.

Specifications require six sacks of cement per cu yd of class A, B, X and pavement concrete.

Bidders include:

Substructure with H-steel piles

1C E. J. Albrecht Co., Chicago, Ill $913,435
2 Industrial Construction Co, Chicago, Ill 914,887

Bids: 7-11-56 Items	Unit	Quantity	Unit Prices 1C	2
Excav, for struct	cy	2,310	$10.00	$11.00
for piers 6-5 & 6-6	cy	3,240	50.00	23.50
for pier fenders	cy	472	10.00	4.00
H-piles, steel, furn	lf	44,630	7.25	6.20
drive	lf	42,410	1.00	0.60
Conc, cl A, in tremie seals	cy	1,164	33.25	33.00
in piers	cy	4,344	35.00	64.20
in fenders	cy	750	25.00	30.00
Reinforcing steel	lb	323,000	0.15	0.16
Carbon steel, fabric f	lb	43,800	0.35	0.33
Struct steel, erect	lb	43,800	0.10	0.13
Piles, stl sheet, for fenders	sf	18,720	2.75	2.95
Stone fill for fenders	t	3,672	7.00	9.70
Engineer's field office	ls	job	3,500	7,800

Time to complete: 350 calendar days
Liquidated damages: $375 per day

Substructure with cast-in-place concrete piles

1 E. J. Albrecht Co., Chicago, Ill $882,908
2 W. E. O'Neil Const. Co., Chicago & D. W. Winkelman Co., Inc., Syracuse, N. Y 995,068

Bids: 4-30-56 (rejected) Items	Unit	Quantity	Unit Prices 1	2
Excav for struct	cy	2,310	$8.00	$8.00
for piers 6-5 & 6-6	cy	3,240	4.00	28.00
for pier fenders	cy	472	4.00	10.00
Stl shells for cast-in-place conc piles furnish	lf	44,630	4.90	6.00
drive	lf	42,410	2.10	2.40
Conc, cl A, in tremie seals	cy	1,164	38.00	40.00
in piers	cy	4,344	76.00	60.00
in fenders	cy	750	35.00	50.00
Reinforcing steel	lb	323,000	0.15	0.15
Carbon steel, fabricated f	lb	43,800	0.33	0.30
Struct steel, erect	lb	43,800	0.15	0.15
Piles, stl sheet, for fender	sf	18,720	2.50	3.50
Stone fill for fenders	t	3,672	6.00	7.00
Engineer's field office	ls	job	3,500	8,200

Time to complete: 350 calendar days
Liquidated damages: $375 per day

Superstructure

1C American Bridge Div. of U. S. Steel Corp., Chicago, Ill $6,835,170
2 Allied Structural Steel Cos, Chicago 7,228,478

Bids: 4-23-56 Items	Unit	Quantity	Unit Prices 1C	2
Bit matl, prime coat	gal	1,940	$0.35	$1.00
Bit conc bindr crse	t	1,170	12.00	15.00
surf crse	t	1,170	14.00	15.00
Conc for struct, cl A	cy	635	70.00	100.00
cl B	cy	4,228	138.00	135.00
lightweight	cy	868	165.00	150.00
Stl, reinf	lb	1,823M	0.1635	0.18
fabr carb, for deck truss simple spans	f lb	3,838M	0.1945	0.22
for cantilever spans	f lb	4,983M	0.2325	0.25
for towers & bents	f lb	1,449M	0.245	0.22
fabr silicon, for deck tr simple spans	f lb	1,441M	0.215	0.25
for towers & bents	f lb	476,000	0.275	0.25
fabr hi str low alloy, for cantilever spans,	f lb	5,064M	0.2795	0.29
for towers & bents	f lb	530,000	0.299	0.27
struct, for cantil sp	e lb	10,027M	0.0795	0.085
for towers & bents	e lb	2,455M	0.435	0.07
for deck tr spans	e lb	5,323M	0.0615	0.065
Handrail, met	lf	4,906	9.50	13.00
CIP, soil, drain, 6"	lf	90	25.00	30.00
Pipe, drain, wt, 8"	lf	3,252	25.50	25.00
10"	lf	530	32.00	35.00
Scupper, type A	ea	68	115.00	150.00
Elec facilities in struct	ls	job	47,000	50,000
Navigation lighting	ls	job	55,000	60,000

Time to complete: 575 calendar days
Liquidated damages: $2,000 per day
Bonus for earlier completion: $2,000 per day

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KERN THE MOST MODERN surveying instruments available. Down-to-fundamentals, functional design ... maximum operational efficiency and portability ... reliable precision results.

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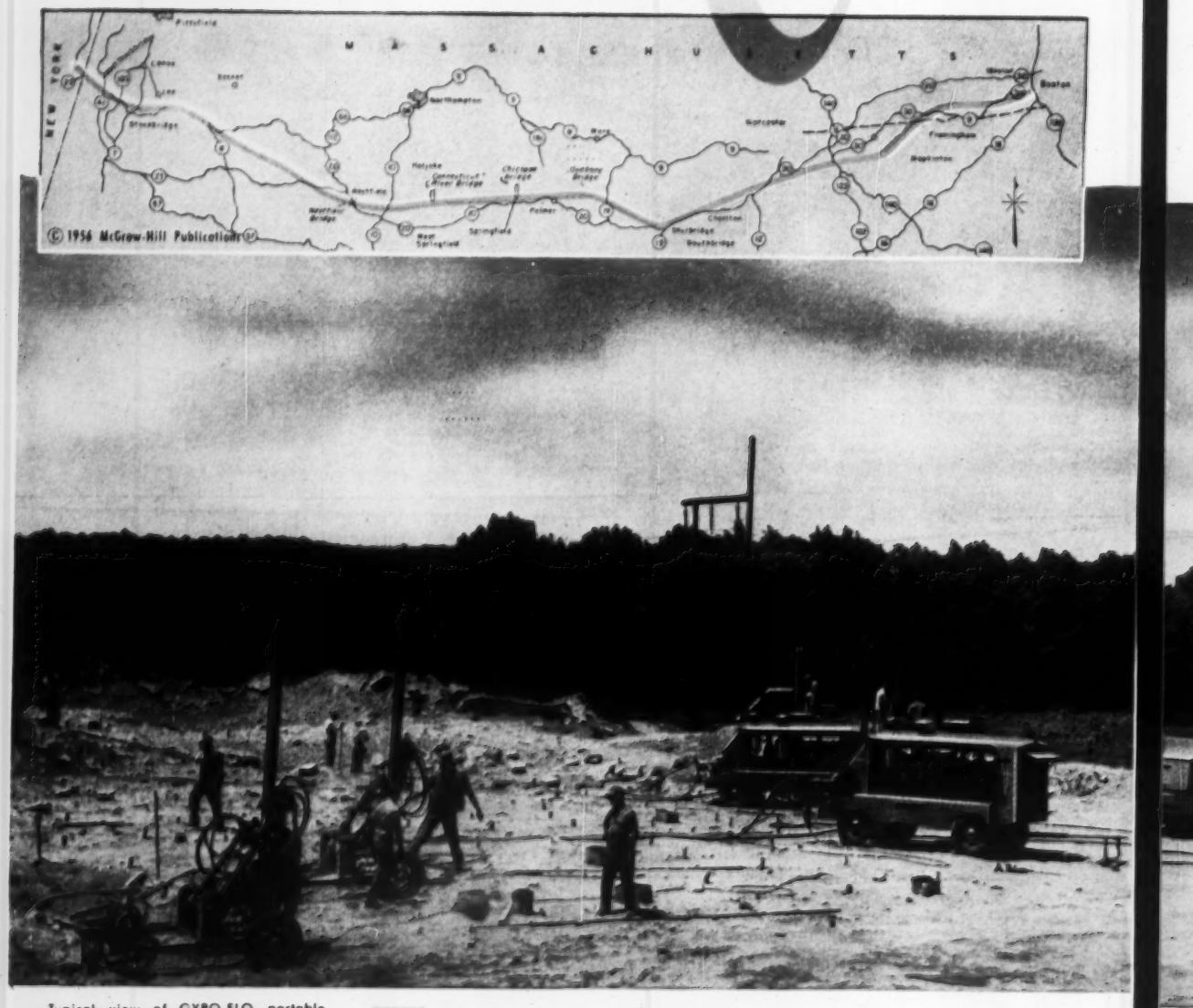
87 GYRO-FLO



Typical view of GYRO-FLO portable compressors at work on the Massachusetts Turnpike. Here, three 600 cfm units, operated near North Grafton, Mass., by the Gilbane Building Company, are supplying air power to five Ingersoll-Rand FM-3 Wagon Drills.

IR CONTRACTORS' COMBINATION

COMPRESSORS
ROCK DRILLS
AIR TOOLS
CARSET BITS
PUMPS

on the Massachusetts Turnpike

PORTABLE COMPRESSORS

help speed construction of this 123-mile cross-state expressway

STRETCHING from Boston on the east to a proposed connection with the New York State Thruway on the west, the Massachusetts Turnpike project is moving rapidly ahead to completion.

It's a big job—with the accent on speed. And 87 GYRO-FLO Portable Rotary Compressors—including 77 units each of 600 cfm capacity—are delivering a mighty large share of the air power required for the huge drilling and blasting work involved. Putting down the blast holes are a number of I-R Drillmaster and Quarrymaster superdrill rigs and many wagon drills, Jackhamers and other I-R rock drills.

In severe heavy-duty service such as this, the maintenance-free features of the GYRO-FLO portable cannot be over-emphasized. There are no pistons, rings, rods, or valves to wear out, adjust, or replace. This assures both simpler operation and greater dependability in performance. The GYRO-FLO provides cool, oil-free air, smoothly, without pulsation, at pressures that are automatically maintained between 100 and 110 psi under all load conditions.

Now available in 85, 125, 210, 315, 600 and 900 cfm sizes, GYRO-FLO compressors offer a new high in portable air-power efficiency. See your I-R distributor or branch office for full information on the compressor size that will meet your needs best.

Ingersoll-Rand

2-452 11 Broadway, New York 4, N.Y.

AN UNBEATABLE COMBINATION . . . GYRO-FLO COMPRESSORS AND I-R ROCK DRILLS

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- * Oct. 11 — Iron and Steel Products; Pipe
- * Oct. 18 — Wood Products, Glass, Explosives, Chemicals
- * Oct. 25 — Clay Products, Lime, Plaster Paint, Roofing
- * Nov. 1 — Wage Rates, Building Board, Lath, Insulation

CEMENT, AGGREGATE, READY-MIXED CONCRETE — F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del. 50 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.12a	$3.71a	$3.55	$2.75	$2.75	$2.50‡	$2.14	$2.24	$1.45	$1.65	$0.19	$	$13.75g
Baltimore	4.23c	3.82c	3.61c	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18	.18a	12.75
Birmingham	3.73	3.00g/		2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	.18	.18	12.30
Boston	4.91k	4.44a	4.71e	3.00a	3.00a	3.00a	1.65a	1.75a			.23	.275a	14.00A
Chicago	3.95a	3.57a	3.72	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	.25	.25b	13.50
Cincinnati	4.22c	3.81c	3.90	2.19‡c	2.24‡c	2.24‡*	2.54‡c	2.54‡c			.205	.25a	12.40
Cleveland	N.A. in C.L.	3.59		2.15ef	1.95f	1.65	4.30‡a	4.30‡a	3.30‡a	3.30‡*		.23	16.15
Dallas	3.35a	2.95a	3.23	2.42	2.53	1.84	2.22	2.38			.11e	.2675	11.25
Denver	4.56a	4.09a	4.59	1.90	2.05	1.20					.22	.245a	10.70
Detroit	4.10a	3.45a*	3.73	4.25‡b	4.25‡b	4.00‡b	3.75‡	3.75‡	3.50‡	3.50‡	.23	.22a	14.20
Kansas City	4.30b	4.10b	4.10			1.70e‡a	2.00‡a	2.00‡a			.20a	.24c	13.50g
Los Angeles	5.12eh	4.66eh	5.60	2.41‡a	2.76‡a	2.41‡a	2.41‡a	2.44‡a			.145/m	.255m	12.95h
Minneapolis	4.40a	4.08a	3.99	2.70‡ag	2.70‡ag	1.80‡ag	3.25‡ag	3.25‡ag			.19		14.00f
Montreal	3.11d	2.85d	3.50	1.95‡a	2.20‡a	2.25‡a	1.95‡a	2.20‡a			.20	.20a	10.80ek
New Orleans	3.55a	3.15a	3.48	2.44	2.44	2.00			1.45	1.65	.275		13.65
New York	4.56a	4.15a	3.88	3.05bk	3.05bk	2.00bk	2.90bl	2.90bl			.25	.30b	16.00an
Philadelphia	4.03/4.42‡a	3.72/4.09‡a	3.64/4.27‡	2.85‡ap	2.85‡ap	2.35‡ap	2.70‡	2.80‡	2.00	2.35	.22/.28		13.20de
Pittsburgh	4.15a	3.76a	3.75	2.40‡	2.40‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.25d	.31	14.00
St. Louis	3.88/4.15e	3.46/3.75c	3.71/4.03	3.25am	3.10am	2.40/3.10am	1.60j	1.70j			.23	.25c	12.90
San Francisco	3.79c	3.39c		2.02	2.02	2.12	2.17	2.17			.24	.28el	12.80c
Seattle	4.30a	3.75a		4.00‡bm	4.00‡bm	4.00‡bm	4.50‡bm	4.50‡bm			.26	.27	13.30j
Toronto	4.00	4.00	4.00	2.25‡	2.25‡	1.85‡	2.05	2.05	2.05	2.05	.25	.31e	14.55

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a Less 10¢ disc, 15 days. *b Less 2% disc, 15 days. *c Less 10¢ disc, 10 days. *d Truckload lots, deliv. 10¢ disc, 20 days. *e Truckload lots *f Fob mill, add $13.11 to $19.16 per car switching charges *g fob mill + freight *h LCL.

SAND, GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e ½". *f Pea gravel. *g Less 5% for cash. *h Less than 5 tons. *i Plus 5% mun. & prov. tax *j F.o.b. quarry. *k Barge lots and. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *o 1-3 mi zone. *p Add 10¢ for ea. add'l mi zone. *r Revised

CONCRETE BLOCK: *a Cinder *b Waylite. *c Haydite. *d Celocrete *e 8¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i Less 2% for cash *j F.o.b. plant San Rafael. *m F.o.b. yard.

READY MIXED CONCRETE: *a 5 cu. yds. or over del. Man. *b 25 cu. yds or more *c 10-100 cy. brackets. *d 1-3 mi. zone. *e 2,000 lb comp. *f 2,500 lb. comp. *g Less 25¢ disc, 15 days. *h Less 50¢ for cash. *i 8% off for cash. *j 2% off for cash. *k Federal tax included. Add 5% mun. & prov. *l 1:2½:3½. *m F.o.b. yard *n Plus escalator clause. *o Add 15¢ for ea. add'l 3-mi zone. *p Correction: $1350 eff. Sept. 1

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.15†	Buffington, Ind	$3.10†	Steelton, Minn	$3.20†	Muskegon, Mich	$3.15†	Toledo, O	$3.15†
Clinchfield, Ga	3.15†	Independence, Kan	2.95†	Leeds, Ala	3.00†	Saginaw, Mich	3.15†	Milwaukee, Wis	3.30†
Kingsport, Tenn	3.15†	Hannibal, Mo	3.10†	Duluth, Minn	3.20†	Wyandotte, Mich	3.15†	Green Bay, Wis	3.30†
West Des Moines, Iowa	3.20†	Northampton, Pa	3.20†	Hudson, N. Y	3.20†	Buffalo, N. Y	3.25†	Ironton, O	3.15†
Nazareth, Pa	3.20†	Universal, Pa	3.20†	Alpena, Mich	3.05†	Oswego, N. Y	3.30†	Montreal City	3.55†
Bath, Pa	3.20†	Waco, Tex. (+ 10¢ tax)	3.10†	Detroit, Mich	3.15†	Cleveland, O	3.20†	W. Winfield, Pa	3.30†
Easley, Pa	3.20†	Giant, S. C	3.25†	Howes Cave, N. Y	3.20†	Alsen, N. Y	3.20†	Security, Md	3.20†

† *Prices to hold for Fourth quarter of 1956.*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS — F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 80,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta				$27.60	$40.00	$0.15	$0.25	$0.114 Pw	$0.276 Pw	$0.15	$0.15	$0.25
Baltimore	180.00‡			23.00s		.095s	0.185s	10ssE	19ssE	.10¢	.105s	0.195s
Birmingham		62.00s										
Boston				22.00ap	35.00ap	22.00as	30.00as	.095aFw	195aFw	.095a	.095aG	175aG
Chicago	180.00‡	88.00‡b	3.95/4.00‡j	21.85b	31.85b	20.85bs	30.85bs	10ssH	18ssH	.09b		
Cincinnati												
Cleveland		82.00d	5.60g	23.00A		23.00A		1025AwF			1025AG	20AG
Dallas	e	40.00	e	25.20	44.29	1066	1894	28.55	50.06	.1030	1066	1894
Denver		80.00										
Detroit		113.00		29.65		29.65r		1285wI		.1026		28
Kansas City	e	e	e	7.00cl		18.60s		085swJ		.075c	0.125	
Los Angeles	e		e	18.50dmz		18.50dzz		20.00dzK		19.00dz	09j	19j
Minneapolis			3.17A	26.50		26.50		0.115sz		0.105	1242	
Montreal	e	e	e	27.00n	39.60n	135n	198n	16.90nwK	20.90nwK	.132n	197nz	239nz
New Orleans				17.60z	e	17.60ns	e	085swz	e	085B	09BL	
New York			3.70f	23.89qCD	44.86qD	23.89wCD	44.86wD	1073wCDF	1939wDF		1073CD	1939D
Philadelphia	175/185	110/120	4.06	22.00		22.00		095wF		.095		
Pittsburgh	185.00	48.00	4.60	27.00	38.00	10	21	27.00E	40.00E	.098	11	224
St. Louis				20.63°		.1764		0925fgM		0.16	.105	
San Francisco		70.00z		20.50g	37.50g	20.50gks	37.50gks	21.50gN	39.00gN	21.25z	0925g	1825z
Seattle				24.50z	38.50A	18.75kz		26.00K		22.25kz	0925A	1025Ar
Toronto			4.40	34.20	50.66	0.19	0.34	0.20w	0.25w	0.20	0.20	24

‡ Delivered.

PAVING BRICK & BLOCK: *a CL. *b 3 x 4 x 8. *c 2½ x 8¼ x 4. *d LCL, truck deliveries. *e Not used. *f 2" Interior 6# treat. *g 3" *h 2" tr. 6# *i 3 x 3⅝ x 8½. *j 2½", 6 lb. tr.

ASPHALTS: *a Price at plant, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segunda. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 penetr. *l Less than 100 penetr. *m 40-80 penetr. *n Fed. tax included; add 5% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60-70 penetr. *q 40-85 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 85-200 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks. *y F.o.b. Oakland *z F.o.b. Edmonds *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *C Bulk. *D Prices based on transporting to Manhattan via truck. *E RC. *F Also RC. *G Also MS, SS. *H RC 0-5 incl. *I MC 4. *J MC, RC .0675. *K MC 3, 4 & 5. *L MS. *M MC 1-5, RC 1-5, .089. *N MC 3. *O fob Roxanna, Ill *P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums.

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Square pegs weren't made for round holes. And aircraft bearings aren't built for farm equipment, either. That's why Bower designs a complete line of straight roller bearings—a line broad enough to meet any product requirement.

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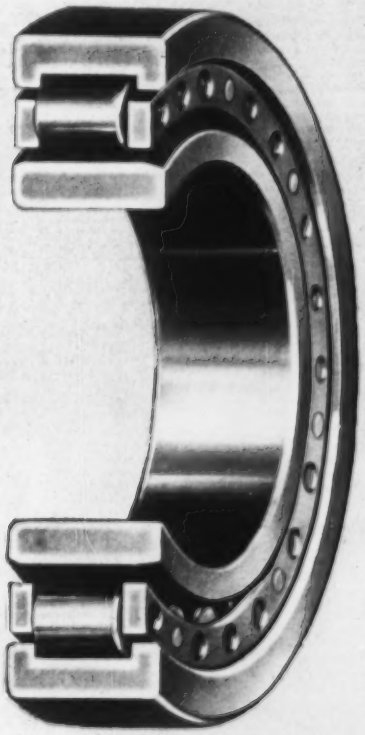
Bower Roller Bearings are proved performers *in every field*, for *any* straight roller bearing application. From motors to earthmoving equipment, they're on the job—cutting maintenance and downtime, setting new standards of efficiency and economy. Get details on the *complete* line from a Bower engineer.



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Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. FELIX, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Conn., Newtown**—THERAPY—BA 10/17—State P. Wks. Dpt., 165 Capitol Ave., Hartford. Proj. BI-A-109, occupational therapy bldg., Fairfield State Hospital. $1,350,000. Plans deposit $35. Fletcher-Thompson, Inc., 211 State St., Bridgeport, archt. CD 11/28/51.

BUILDINGS—SLC

▲ **Conn., Stamford**—SCHOOL, etc.—Diocese of Bridgeport, Chancery Office, 395 Washington Ave., Bridgeport, soon lets contract Catholic high school and convent, Newfield Ave. between Case and Vine Rds. $2,250,000. J. Gerald Phelan, 211 State St., Bridgeport, archt. Fletcher-Thompson, Inc., 211 State St., Bridgeport, engr. CD 8/27.

▲ **Mass., Cambridge**—SHOPPING CENTER—B & M Realty Co., 6 Beacon St., Boston, soon lets contract shopping center, Porter Square, Mass. Ave., White, Elm and Davenport Sts. $1,000,000. Herman L. Feer & William E. Nast, 27 School St., Boston, archts. Star Market Co., 283 Walnut St., Newton, lessee. CD 1/11.

BUILDINGS—LB & CA

▲ **Standard Constr. Co.**, 250 Builders Exchange Bldg., Minneapolis, Minn. LB $1,721,400. (6 bidders) general constr. two BUILDING addns., at Cambridge State School & Hospital, CAMBRIDGE, MASS. **State,** Dpt. Admin., 19 State Capitol, St. Paul, Minn. Bids Sept. 19. CD 8/27.
Healy Plumbing & Heating Co., 278 W. Kellogg Blvd., St. Paul, Minn. LB $357,000. (7 bidders) plumbing and heating work. (Cambridge, Mass.).

▲ **State, Dpt. Mental Health**, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass., rejected bids Aug. 17, M-716, admission treatment bldg., State Hospital, MEDFIELD, MASS. LB $1,830,431. Will re-advertise. CD 8/21, under LB.

Ernest F. Carlson, Inc., 1694 Main St., Springfield, Mass. LB $571,473, est. $525,000. State Aided 667-1 HOUSING for the elderly, St. James Ave. and Carew St., SPRINGFIELD, MASS. Springfield Housing Auth., 124 Putnam Circle, Springfield, Mass. CD 9/6, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

NEW JERSEY-PENNSYLVANIA — BA 10/11 — Delaware River Port Auth. of the Commonwealth of Pennsylvania and the State of New Jersey, Administration Bldg., Camden, N. J.:
Walt Whitman Bridge Contract No. P-13, installing new stacks on power plant of Publicker Industries, Inc., Delaware and Packer Ave., Phila., Pa. Plans deposit $10. Bids 9/13 rejected, adv. ENR 10/4. CD 8/28.

BUILDINGS—BA

▲ **Md., Baltimore**—HOSPITAL—BA 10/10—City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore, Zone 2, brick, concrete, steel city hospital east wing alteration and new rear west wing. $1,000,000. Plans deposit $100. Lucius R. White Jr., 1009 N. Calvert St., Zone 2, archt. CD 5/21.

▲ **Md., Baltimore**—HOUSING—BA 10/17—U. S. Eng., 24 St. and Maryland Ave., Zone 18, construct and finance 198 armed services housing units, (Capehart), ENG-18-020-57-4. $2,000,000. Plans deposit $25. Lawrence A. Menefee, 803 Park Ave., Zone 1, archt.-engr. CD 8/16, under LB.

N. Y., Oswego—DORMITORY—BA 10/18—At office Dormitory Auth., 55 Grant Ave., Albany, Zone 6, dormitory at State University Teachers College. $800,000. Plans deposit $40 each general constr., plumbing work electric and lighting fixtures, heating and ventilating Lorimer Rich & Assoc., 35 W. 53 St., New York, Zone 19, archts.

BUILDINGS—SLC

▲ **Del., Wilmington**—PARKING, etc.—Wilmington Parking Auth., City Hall Bldg., soon lets contract 4 story, bsmt., 361x174 ft. auto parking bldg. and 7 stores, 300 car capacity. $2,000,000. Whiteside Moeckel & Carbonett, 909 Tatnall St., archts. Louis H. Doane, Penna. R.R. Bldg., consult. engr.-archt.

HEAVY CONSTRUCTION—LB & CA

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg:
Marsellino Constr. Co., 109 Fayette National Bank Bldg., Uniontown, Pa. CA $2,739,102. constr. 38,908 ft. divided road, crushed aggregate base with bit. surf. 28 ft. wide each side of concrete divisor, two I-beam bridges, 2 prestressed precast rein.-conc. bridge, Somerset Twp. T. A. 31, Washington Co. CD 9/10, under LB.

† **Southern Commercial Constr. Co., Inc.**, 1541 Penn. Ave., S. E., Wash. 3, D. C. CA $775,300. technical training bldg., Andrews Air Force Base, ENG-57-9-(9), ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C. Bids Aug. 15. CD 8/23.

▲ **Underground Constr. Co.**, 1900 Jefferson-Davis Hy., Box 2215, Potomac Station, Alexandria, Va., LB $4,873,064. (4 bidders) Section 4, East Branch, Piney Branch trunk sewer in Kansas Ave. and S St. from Varnum St. to Ingraham St. N. W., WASH., D. C. D. C. Govt., Dpt. Sanitary Eng., 499 Pennsylvania Ave. N. W., Wash., D. C. Bids Sept. 19. CD 8/9.

BUILDINGS—LB & CA

▲ **Suburban Park Homes**, c/o Herman H. York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. $1,300,000. 65 HOUSES, Plainview Rd. south of Old Country Rd., PLAINVIEW, N. Y.

▲ **Whitehall Park Homes**, c/o Stanley J. Shaftel, archt., 166-21 90 Ave., Jamaica, N. Y. Owner Builds. $2,300,000. 60 HOUSES on 30 acre tract at Maplemoor Lane and North St., WHITE PLAINS, N. Y.

▲ **Arthur Kligman**, 1062 Kilsythe Rd., Elizabeth, N. J. Owner Builds. $2,000,000. 134 HOMES, Middle Rd., Kenwood Estates, Raritan Twp. CENTERVILLE, N. J. Erwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **Lester M. Entein**, 10 S. Harrison St., East Orange, N. J. Owner Builds. $2,000,000. 89 HOMES, Starlight Dr. and Sussex Dr., Rainbow Acres, Morris Twp., MORRISTOWN, N. J. R. H. Fitzsimmons, 24 Gregory Rd., West Orange, N. J., and Percy Simon, 362 Cedar Lane, Teaneck, N. J., archts.

▲ **Bd. Freeholders, Burlington Co.**, Mount Holly, N. J., rejected bids Aug. 29, 4 story, 90,000 sq. ft. OFFICE, site improv., parking area, MOUNT HOLLY, N. J. LB $1,242,249. CD 9/6, under LB.

▲ **Joseph Pennella**, 35 Waldo Ave., Caldwell, N. J. Owner Builds. $3,000,000. 140 HOME development at Swimming River Acres, Hance Ave., NEW SHREWSBURY, N. J. Rudolph L. Novak, 89 Central Ave., Clifton, N. J., archt.

John J. McDonnell, Inc., 69 and Market St., Upper Darby, Pa. CA $500,000. AUDITORIUM, CONVENT, RECTORY and SCHOOL for Queen of the Universe R. C. Church, LEVITTOWN, PA. R. C. Archdiocese of Phila., 225 N. 18 St., Phila., Pa. Gibson & Kline, 117 S. 17 St., Phila., Pa., engrs. CD 7/30.

Master Masons Constr. Co., 1619 W. Thompson St., Phila., Pa. CA $500,000. OFFICE, PHILA., PA. Penn Federal Savings & Loan Assoc., 1623 Walnut St., Phila., Pa. Robert E. McLaughlin, 1411 Walnut St., Phila., Pa., engr. CD 5/24.

▲ **Aetna-Standard Engineering Co.**, Frick Bldg., Pittsburgh, Pa. CA Total Est. $3,500,000 mechanical portions work for installing 12-stand continuous weld PIPE MILL, add 50,000 sq. ft. to west side of existing plant, for Mercer Pipe Division, SHARON, PA. Sawhill Tubular Products, Inc., Clark St., Sharon, Pa. Ramsayer & Miller, Inc., 11 W. 42 St., New York, N. Y. engrs.
Salem, Brosius Co., Arch St., Esten., Carnegie, Pa. Coke Furance (Sharon, Pa.)

Windsor Constr. Co., 2401 Frederick Ave., Baltimore 23, Md. LB $449,000. concrete, steel, masonry South Shore Elementary SCHOOL, Crownsville, ANNAPOLIS, Md. Anne Arundel Co., Bd. Educ., Annapolis, Md. Bids Sept. 19. CD 9/12.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Georgia and South Carolina**—BA About 12/18—U. S. Eng., 200 East St. Julian St., Savannah, Ga. Hartwell Dam and appurtenance works, Hartwell Proj., Savannah River, near Hartwell, CIVENG-09-133-57-105. CD 9/19.

BUILDINGS—BA

▲ **La., Fort Polk**—HOUSING—BA 10/18—U. S. Eng., Box 1229, Galveston, Tex., construct and finance 2,000 housing units (Capehart) ENG-57-8. $15,000,000. CD 8/13, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **Burkholder & Burkholder**, 147 S. Adams St., Rockville, Md., LB $1,511,440 Schedule A; LB $92,250 Schedule B, landing strip extension, clearing, grading, drainage, Tri-State Airport, HUNTINGTON, W. VA. Tri-State Airport Auth., Box 1509 Huntington, W. Va. Bids Sept. 18. CD 9/6.

▲ **FLORIDA**—State Road Dpt., Tallahassee:
Fla.—**Cone Bros. Contg. Co.**, Box 1301, Tampa, Fla., LB $1,093,813 (11 bidders) limerock base with b. conc. drainage structures 9.671 mi. SR 5, F-003-5 (3), Job 7002-277, Brevard Co.;
Fla.—**George G. Tapper Co.**, Port St. Jos., Fla., LB $564,377 (4 bidders) shell stab. base with bit., sand-asph. hot mix surf., shell base w/d'n. strips, 15.444 mi. SR 30 and 30-A, F-017-2 (9) and F-017-2 (10) (Jobs 4909-201, 4901-202, 5101-204 and 5107-202), Franklin and Gulf Counties;
Fla.—**J. W. Conner & Sons, Inc.**, Box 2522, Tampa, Fla., LB $629,102. (8 bidders) limerock base with b. conc. c. conc. small drainage structures 8.493 mi. SR 55 and 584, F-025-1 (10) Job 1515-208 and Job 1508-107, Pinellas Co.;
Fla.—**Marion Constr. Co.**, Box 577, Ocala, Fla., LB $248,002 (3 bidders) limerock base with bit. b. conc. resurf. with b. conc., drainage structures 7.842 mi. SR 40, F-029-2 (3), Job 1114-201 and Job 1114-106, Lake Co.;
Fla.—**A. B. Covell**, Defuniak Springs, Fla., LB $84,794 (6 bidders) sand-clay base with bit., small drainage structures 4.696 mi. SR S-291-A, S-408 (1), Job 5859-250, Santa Rosa Co.;
Fla.—**Jas. H. Craggs Constr. Co.**, Box 22, Gainesville, Fla., LB $823,651 (4 bidders) limerock base, b. conc. surf. course, storm sewers, drainage structures 4.147 mi. SR 25, Jobs 2601-111 and 2602-115, Alachua Co.;
Fla.—**Jaxon Constr. Co.**, Box 2587, West Bay Annex, Jacksonville, Fla., LB $214,492 (7 bidders) limerock base, surf. tr., storm sewers 2.915 mi. Job 3358-150, Lafayette Co.; limerock stab. base, surf. tr. 3.885 mi. Job 335-2150, SR S-53, Lafayette Co.;
Fla.—**W & M Constr., Inc.**, Williston, Fla., LB $136,229 (5 bidders) stab. base, surf. 5.93 mi. SR S-337, Job 3458-175, Levy Co.;
Fla.—**J. D. Manly Constr. Co.**, Box 586, Leesburg, Fla., LB $78,038 (8 bidders) limerock base, surf. 1.553 mi. Job 3659-150, SR S-352, Marion Co.;
Fla.—**Coggin & Deermont**, Chipley, Fla., LB $137,251 (3 bidders) shell stab. base, surf. 1.83 mi. and 0.621 mi. respectively Job 4655-152, SR S-22A, and Job 4656-151, Bay Co.;
Fla.—**Dubose Constr. Co.**, Box 2592, Cloverland Sta., Montgomery, Ala., LB $239,991 (12 bidders) concrete box culverts, 99 ft. concrete slab deck bridge, 4.621 mi. Job 5570-150, SR S-271, Jackson Co.;
Fla.—**Caddell & Jackson**, Box 2217, Jacksonville 3, Fla., LB $133,465 (5 bidders) storm drainage Job 7267-153, Duval Co. Bids Sept. 20. CD 9/13.

▲† **McWilliams Dredging Co.**, Box 584, New Orleans, La. CA $2,316,860. Old River Outflow Control, channel dredging, consisting of 13,400,000 cu. yd., Concordia Parish, Inv. 57-31, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids Sept. 5, awarded Sept. 19. CD 9/18, under LB.

(Continued on page 115)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England — Middle West
Middle Atlantic — West of Mississippi
South — Far West

PROPOSED WORK

Water Supply — Public Buildings
Sewers, Waste Disposal — Mass Housing
Bridges — Commercial Buildings
Streets & Roads — Industrial Buildings
Earthwork, Waterways — Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

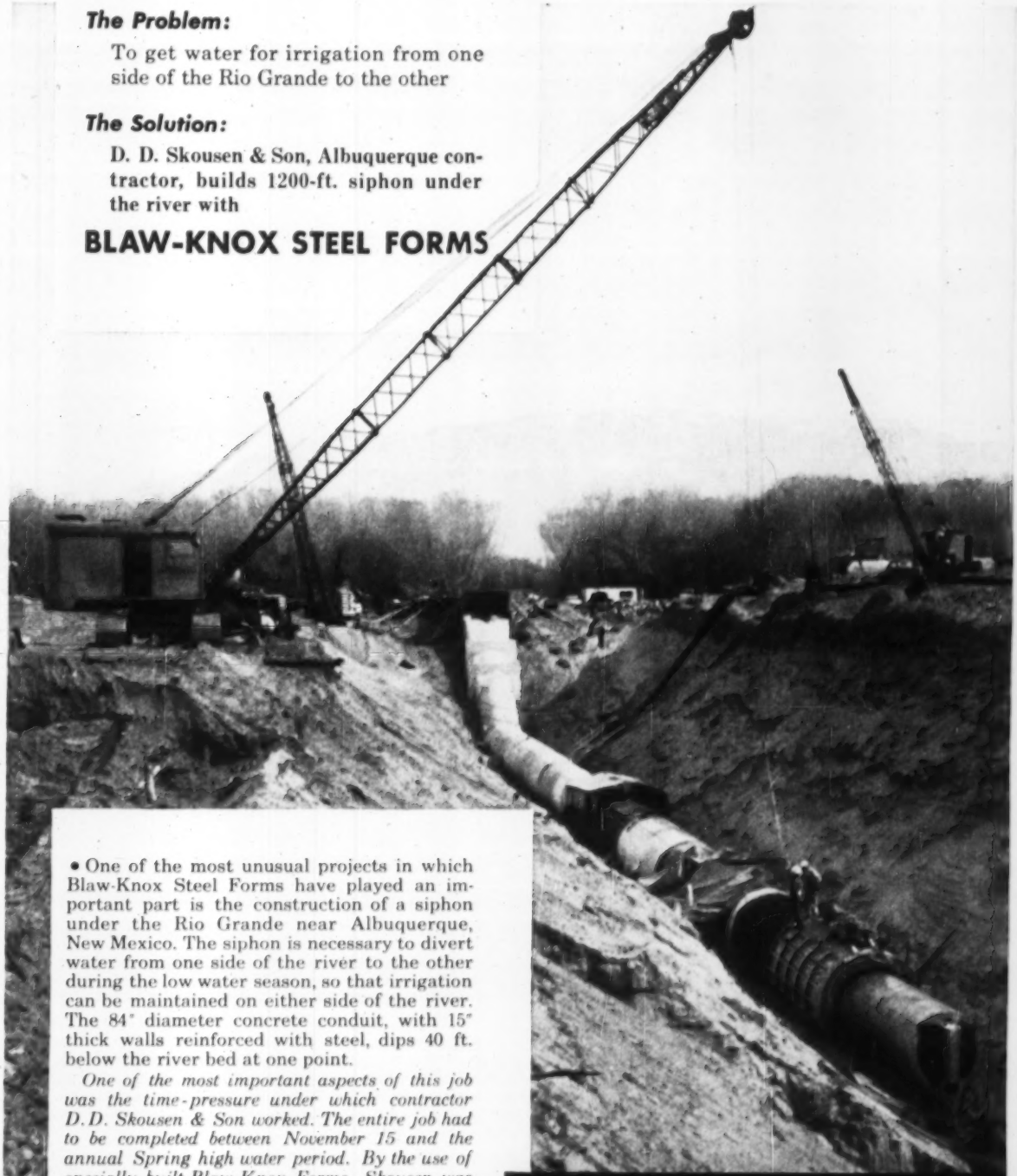
The Problem:

To get water for irrigation from one side of the Rio Grande to the other

The Solution:

D. D. Skousen & Son, Albuquerque contractor, builds 1200-ft. siphon under the river with

BLAW-KNOX STEEL FORMS



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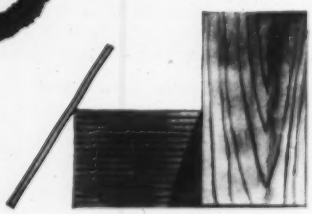
"Can't get this dad-burned sliver o' wood to burn," rumbled Paul Bunyan to Babe, the Blue Ox. A mountain top trembled and fell, damming up a river. "Babe, what the cuss do you suppose them Baxter folks done to this here piece o' plywood? ✻ She's dry—but she JEST DON'T BURN!"



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(Pressure treated with Protexol)

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J. H. BAXTER & CO. *120 Montgomery Street, San Francisco 4, California*

(Continued from page 112)

▲ **W. R. Aldrich & Co.**, Box 147, Alexandria, La. LB $1,622,340. (6 bidders) Proj. No. 1 and 2, extens. to municipal sanitary system, ALEXANDRIA, LA. City Council, Alexandria, La. Bids Sept. 18. CD 9/10.

BUILDINGS—LB & CA

▲† **Wise Contg. Co.**, 8th and Grace Sts., Richmond, Va., CA $5,176,444. eight BARRACKS, ENG-44-110-56-35, FORT LEE, VA. U. S. Eng., foot of Front St., Norfolk 1, Va. Bids June 26, awarded Sept. 14. CD 7/9, under LB.

▲ **English Constr. Co.**, Altavista, Va., CA, $2,292,031. HIGH SCHOOL, HAMPTON, VA. City School Bd., Hampton, Va. Bids Aug. 30. CD 9/6, under LB.

† **Young Lumber Co.**, Beaufort, S. C., LB $717,996 (4 bidders) 50 enlisted men's QUARTERS, U. S. Naval Hospital, NBy 611, Spec. 611/56, CAMP LEJEUNE, N. C. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Sept. 18. CD 9/5.

▲ **P. Smith Constr. Co.**, 310 N. Rome Ave., Tampa, Fla., CA, Total est. $4,000,000. general contract aeronautical navigation sys. mfg. PLANT, near Pinellas County Airport, ST. PETERSBURG, FLA. Minneapolis-Honeywell Regulator Co., 2743 Fourth Ave. South, Minneapolis, Minn. CD 8/2;
Huffman-Wolfe Southern Corp., 408 Sawtl. Ave. S. E., Atlanta, Ga., CA, mechanical work. (St. Petersburg, Fla.);
Bigby Electric Co., Inc., 208 Florida Ave., Tampa, Fla., CA, electrical work (St. Petersburg, Fla.).

MIDDLE WEST

BUILDINGS—BA

▲ **O., Maple Heights**—HIGH SCHOOL—BA 10/23—Maple Heights Bd. Educ., A. E. Hadfield, supt., 5500 Clement Dr., Junior High School. $1,200,000. Plans deposit $35. Outcalt, Guenther & Assoc., 13124 Shaker Square, Cleveland, Zone 20, archts. CD 8/8.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus,
O.—**John R. Jurgensen Co.**, Round Bottom Rd., Newtown, O. CA $709,363, est. $975,600, Type T-35, 16.202 mi. U. S. R. 62, Sects. 13.97, (0.00-1.19), (2.38), 0.00, Fayette, Madison and Pickaway Counties;
O.—**W. L. Johnson Constr. Co. & Assocs.**, P. O. Box 6668, Bexley Station, Columbus, O., CA $1,098,060, est. $1,329,300, Type T-35 on B-20 and structures 7.723 mi. S.R. 161, Sect. 5.12; SR 37, Sect. 15.09, Licking Co. Bids Sept. 5. CD 9/12, under LB.

† **Great Lakes Dredge & Dock Co.**, Williamson Bldg., Cleveland 14, O. CA $636,600, est. $575,000. maintenance dredging, Cuyahoga River, OHIO. U. S. Eng., Engineer Park, Buffalo 7, O. Bids Sept. 6, awarded Sept. 19. CD 9/11, under LB.

▲† **William A. Smith Contg. Co., Inc.**, 1401 Fairfax Trafficway, Kansas City, Mo., LB $1,759,815, est. $1,795,876 (8 bidders) relocating Baltimore & Ohio R.R. bridge superstructures and trackwork, Dillon Reservoir Proj., Licking River, CIVENG-46-022-57-6. OHIO. U. S. Eng., 237 Fourth Ave., Huntington, W. Va. Bids Sept. 20. CD 8/29.

▲† **Merritt-Chapman & Scott Corp.**, Standard Bldg., Cleveland, O., CA $3,358,344. Stage II, removal of 1,134,900 cu. yd. rock and earth from Ashtabula Harbor at Ashtabula, OHIO. U. S. Eng., Engineer Park, Buffalo 7, N. Y. Bids Sept. 20. CD 9/10, under LB.

▲ **John Klag & Assoc.**, 3838 Secor Rd., Toledo, O., LB $485,817, est. $495,054 (2 bidders), Sect. F, 10,185 ft. 8- to 21-in. sewers, 612 V.F. manholes, etc. Laskey Road Sanitary Sewer, TOLEDO, O. Comrs. Lucas Co., Court House, Toledo, O. Bids Sept. 14. CD 9/6.
Niezgoda Bros., 1219 Belmont St., Toledo, O. LB $627,679, est. $627,988 (2 bidders), Sect. G, 11,715 ft. 8- to 21-in. sewers, Douglas Rd. from Laskey Rd. to Michigan Line, 664 V.F. manholes, etc. Laskey Road Sanitary Sewer (Toledo, O.);
L. H. Halpin Co., 3173 Aldringham St., Toledo, O. LB $681,957, est. $682,893 (3 bidders) Sect. H, 13,513 ft. 8- to 21-in. sewers, Fairgrean Dr. and Secor Rd. from Laskey Rd. to Michitan line, 760 V.F. manholes, etc. Laskey Road Sanitary Sewer (Toledo, O.).

Thomas McQueen & Co., 1313 Circle St., Forest Park, Ill., CA, $849,576. Lake St. bridge (Northwest Expressway) across Chicago River, Halsted St. to Des Plaines, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids July 18. CD 7/25, under LB.

▲ **Santucci Constr. Co.**, 5035 Church St., Skokie, Ill., CA, $1,294,000. Beverly Calumet Sewerage System, Morgan St., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Aug. 6. CD 8/31, under LB.

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison,
Wis.—**Robert W. Ryan Co.**, Janesville, Wis., LB $311,829. Contract 1, ballast, base course 4.098 mi. S.T. Hy. 57 and 84, F-02-3 (13), F 02-3 (12) and S-0138 (1), Ozaukee Co.;
Wis.—**John F. Bloomer Co.**, 341 W. College Ave., Appleton, Wis., LB $385,710. Contracts 2 and 1, ballast, base course 5.473 mi. S.T. Hy. 57, Proj. F 02-3 (13) and F 02-3 (17), Ozaukee and Sheboygan Counties;
Wis.—**L. G. Arnold, Inc.**, 201½ N. Dewey St., Eau Claire, Wis., LB $107,322. Contract 1, grading base, structure 1.074 mi. S.T. Hy. 93, Proj. T 090 (5), Trempleau Co.;
Wis.—**James Peterson & Sons**, Medford, Wis. LB $181,975. Contract 1, grading, ballast, base 5.071 mi. S.T. Hy. 35, Proj. T 028-2 (2) St. Croix Co.;

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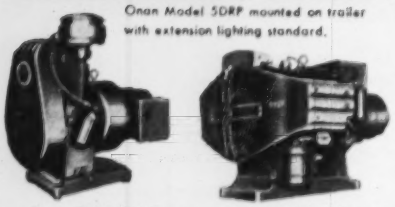

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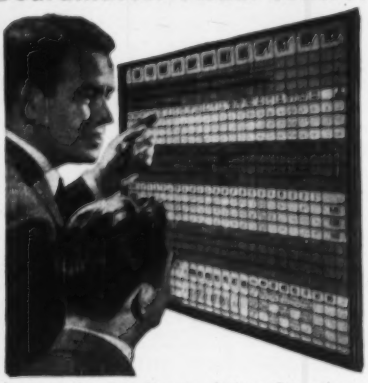

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Wis.—**H. Turner & Son**, Boscobel, Wis., LB **$416,494**. Contract 1, grading, ballast, base course 7.379 mi. S.T. Hy. 70. Proj. T 0283 (8) Price Co.;

Wis.—**O'Keefe Constr. Co.**, De Pere, Wis. LB **$249,212**. Contract 1, base, b. conc. 4.591 mi. S.T. Hys. 17 and 70, Proj. T 0287 (7) and T 024-1 (4) Vilas Co.;

Wis.—**Murphy Constr. Co.**, Black Creek, Wis. LB **$703,044**. Contract 1, base, c. conc. 2917 mi. S.T. Hy 96, Proj. T 0338 (2) and T 0338 (5), Outagamie Co.;

Wis.—**Highway Pavers, Inc.**, 1409 N. 27 St., Milwaukee, Wis. LB **$221,281**. Contract 1, c. conc. base, b. conc. 1.551 mi. U. S. Hy. 12 and S.T. Hys. 13 and 23, Proj. T 04-3 (9), Sauk Co. Bids Sept. 18. CD 8/31.

BUILDINGS—LB & CA

Fabe Constr. Co., 3700 Reading Rd., Cincinnati, O. CA Est. **$500,000**. two 4-story, 43x91 ft. APARTMENTS, off Columbia Parkway, CINCINNATI, O. Ohio River Vista Corp., 4320 Erie Ave., Cincinnati, O. Lee Firth, 3040 Madison Rd., Cincinnati, O. archt. Awarded Sept. 17.

Wigton Abbott Corp., 1225 South Ave., Plainfield, N. J. CA, **$550,000**. 2 story, brick dental and surgical supply PLANT, parking area, State Rd. 2, LA PORTE, IND. Austenal Laborat, Inc., 5932 S. Wentworth Ave., Chicago, Ill.

▲ **E. H. Marhoefer Jr. Co.**, 2424 N 25 Ave., Franklin Park, Ill., CA, **$4,259,524**, general contract, PSYCHIATRIC HOSPITAL and TRAINING HOSPITAL, 1607-59 W. Taylor St., West Side Medical Center, CHICAGO, ILL. State of Illinois, Capitol Bldg., Springfield, Ill. Bids Aug. 21. CD 8/29, under LB;
Gallagher & Speck, Inc., 546 Harrison St. Chicago, Ill., CA, **$1,272,922**, heating work (Chicago, Ill.);
Economy Plumbing & Heating Co., 1308 S. Pulaski Rd., Chicago, Ill., CA, **$748,400**, plumbing work (Chicago, Ill.);
Harmon Electric Co., 4511 Madison St., Chicago, Ill., CA, **$693,495**, electrical work (Chicago, Ill.);
Hanley & Co., 1503 Michigan Ave., Chicago, Ill., CA, **$370,500**, ventilating work (Chicago, Ill.).

Ockerlund Constr. Co., 4911 N. Lincoln Ave., Chicago, Ill. CA, **$750,000**. 1 story, 70,000 sq. ft. brick BAKERY addn., CHICAGO, ILL. Burny Bros. Bakeries, 4600 W. Chicago Ave., Chicago, Ill. Bids Aug. 20. CD 8/13.

Admiral Builders, 3349 Dempster St., Skokie, Ill. Own Forces. **$500,000**. 2 story, brick HOTEL, 9323 Waukegan Rd., MORTON GROVE, ILL. Ronald Simon, 1733 W. Pratt Blvd., Chicago, Ill., archt.

▲ **South Gate Corp.**, c/o Charles F. Agree, archt., 1140 Book Bldg., Detroit, Mich. Owner Builds. **$4,500,000**. Southgate SHOPPING CENTER, 40 stores Eureka and Trenton Rds., ECORSE, MICH. CD 9/8/52.

▲ **Krieghoff Co.**, 66661 French St., Detroit, Mich. CA, **$1,853,533**, general constr. Chalfonte JUNIOR HIGH SCHOOL, Grosse Pointe Farms, GROSSE POINTE, MICH. Bd. Educ., Grosse Pointe Pub. Schools, 390 St. Clair Ave., Grosse Pointe 30, Mich. CD 9/12, under LB.

▲ **Oakland Co.**, c/o Charles N. Agree, Inc., archt., 1140 Book Bldg., Detroit 26, Mich. Owner Builds. **$2,500,000**. SHOPPING CENTER, Greenfield and Oakwood Rds., MELVINDALE, MICH. CD 4/27.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲ **Mo., St. Louis**—LIGHTING AND UNDERGROUND CONDUIT—BA 10/23—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., Zone 3, installing mercury vapor lighting and underground conduit on Grand Blvd. and East Grand Ave. from Holly Hills Blvd. to North Broadway, 8.26 mi., $591,000; on Franklin Ave. and Easton Aves. from North Jefferson Ave. to western city limits, 4.85 mi., $355,000; on Gravois Ave., Grand to Chouteau Ave., 13 St., Cass Ave. to Mullanphy St. and parts of Mullanphy and Palm Sts., and north Florissant Ave., 4.09 mi., $382,000.

BUILDINGS—BA

▲ **Kan., Merriam**—SCHOOL—BA 10/11—Shawnee-Mission High School Dist., 7401 Johnson Dr., Merriam, Shawnee-Mission High School East at 75 and Mission Rd. $4,000,000. Neville, Sharp & Simon, 12 and Walnut St. Bldg., Kansas City, Mo., and Perkins & Will, 309 W. Jackson St., Chicago, Ill., archts. CD 3/21.

Mont., Billings—HOSPITAL—BA 10/17—Sisters of Charity, Leavenworth, 5 story St. Vincent Hospital addn. $850,000. Plans deposit $50, Cushing, Terrell & Assoc., 1333 N. 27 St., archts. CD 8/16.

▲ **Minn., Anoka**—FOOD SERVICE—BA 10/25—State, Dpt. Admin., P. T. Peterson, dir. Purchases, 19 State Capitol, St. Paul, 2 story, 169x261 ft., food service bldg., Anoka State Hospital. $1,150,000. Plans deposit $50. Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, archts. CD 7/29/55.

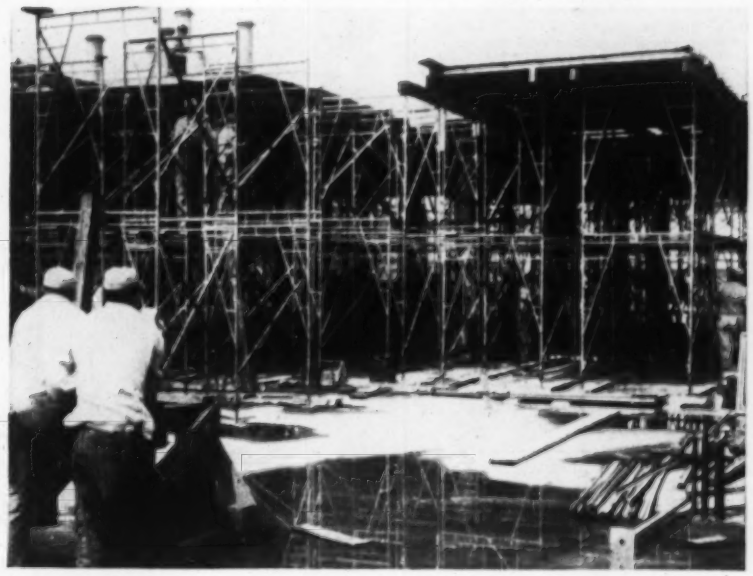
▲ **Tex., Texas City**—SHOPPING CENTER—Bids Asked—Harbor Village Development Corp., c/o J. C. French, Texas City, shopping center. $2,750,000. CD 9/19.

BUILDINGS—SLC

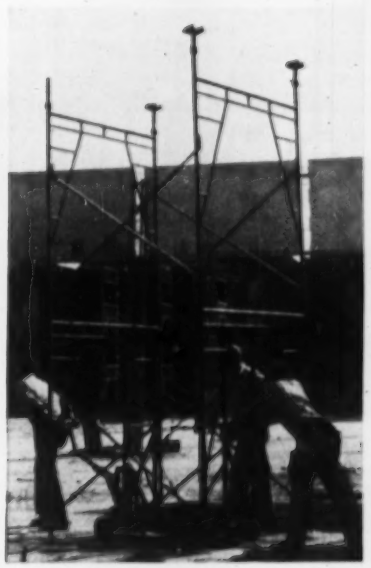
Colo., Denver—OFFICE—Colorado Hospital Service, 1653 Lawrence St., Denver, soon lets contract 3 story, full bsmt., 37,200 sq. ft. Blue Cross-Blue Shield Office. $630,000. Baume & Pollivnich, 1225 Bannock St., engr. Bids 8/30 rejected, LB **$805,800**. CD 9/12, under LB.

Colo., Denver—STUDENT CENTER, etc.—Regis College, W. 50 Ave. and Lowell Blvd., soon let contract student center and dormitory, $900,000. Edwin A. Francis, 218 E. Speer Blvd., engr.-archt. CD 6/13/55.

(Continued on page 118)



THIS UNIQUE SYSTEM of moving complete sections of shoring to new pour areas is used by Wigton-Abbott Corp., Plainfield, N. J., to eliminate the job of disassembling and reassembling the shoring. Eleven "Trouble Saver" Sectional Shoring units, each covering 720 sq. ft., are pulled on wood sills by a hand winch. Each unit was slid three times for succeeding concrete pours during construction of the 189' x 231' Monsanto Chemical Co. warehouse, Kearney, N. J. Form work was "permanently" placed on those sections between drop heads.



WHEELED HYDRAULIC dolly is used to move four-frame unit of "Trouble Saver" Shoring to next pour. This system speeds operation for William J. Moran Co. on Emporium-Capwell Co. warehouse covering a city block in Oakland, California. 3,600 frames were used on this building.

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ONE OF THE MOST IMPORTANT advantages of modern sectional steel shoring is the fact that it can be planned on the drawing board. Load bearing strength can be accurately calculated, the number of units pre-determined and the whole installation laid out to assure greatest efficiency on the job.

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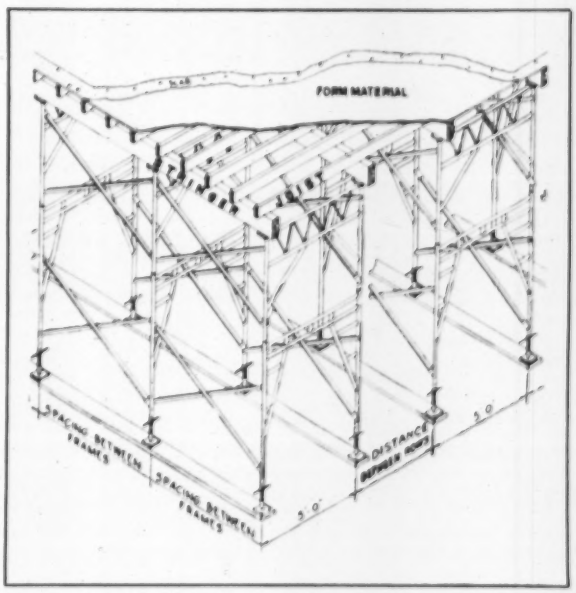
First, PS Co. helps the contractor select the right kind of shoring by carefully studying the character of the job. Contractors planning with PS Co. have a choice of three types of steel shoring: "Trouble Saver"® Sectional, "TubeLox"® tube and coupler type Shoring and Burton's single post Shores. Once selected, the shoring is laid out to carry the desired loads with an adequate factor of safety and also to get maximum re-use from the number of units needed. Unique methods of rolling, sliding and lifting entire sections of sectional shoring from one pour area to another are often worked out at this stage too.

The complete story on PS Co. Shoring can be found in Bulletin PSS-33 "Modern Shoring for Concrete Construction". It's available at no obligation from the Patent Scaffolding Co., Inc.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that **sells** and **rents** "Gold Medal" Scaffolds.



SAFE WORKING LOADS for "Trouble Saver" Sectional Steel Shoring vary according to spacing between 5'-wide frames, distance between rows, and position of stringers on frames. This prefabricated, engineered shoring will handle the heaviest loads and provides a clean, neat installation. It is easily adaptable to all types of construction: flat slab, slab with drop head, pan joist, poured arch and beam.

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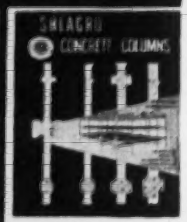

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(Continued from page 116)

HEAVY CONSTRUCTION—LB & CA

▲ **Barbarossa & Sons**, St. Cloud, Minn. and **Nodlund Constr. Co.**, Alexandria, Minn. CA **$1,286,190**. Sect. A of sanitary sewers Trunk Sewer Imprvt. No. 3, GOLDEN VALLEY, MINN. Village, R. W. Owens, clk., Golden Valley, Minn. CD 9/21, under LB.

† **Wm. G. Cook Constr. Co.**, Box 8466, Jackson, Miss. LB **$860,120**, est. $927,665. constr. Missouri River Agricultural Levee Unit, 497-L located along left bank of Missouri River in vicinity of Forest River, new channels for Cannon and Morehead Creeks, levees, appurtenant structures on both banks, ENG-57-9, MISSOURI. U. S. Eng., Federal Office Bldg., Kansas City, Mo. Bids Sept. 18. CD 8/23.

† **Kansas City Bridge Co.**, 928 Broadway, Kansas City, Mo. CA **$536,725**, est. $488,505. constr. and repair approx. 35,000 lin. ft. dike and revetments Kenmoor to Bean Lake Bends, Missouri River, Atchison, Atchison Co., KANSAS. U. S. Eng., 1800 Federal Office Bldg., 911 Walnut St., Kansas City 6, Mo. Bids Sept. 14, awarded Sept. 17. CD 8/24.

▲ **H. J. Hoppel**, 5501 E. Admiral St., Tulsa, Okla., CA **$1,112,440**, est. $1,150,000. Mingo Valley Sewage Treatment Plant, Contr. SA-55-6, TULSA, OKLA. City, City Hall, Tulsa, Okla. Bids Aug. 28, awarded Aug. 31. CD 9/19, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,
Dean Word Co., P.O. Box 330, New Braunfels, Tex., CA **$1,323,439**. flexible base, hot mix b. conc. 4.387 mi. Hy. US 81. Proj. 1-8 (14), Travis Co. Bids Sept. 12, awarded Sept. 19. CD 9/17, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,
Tex.—**Heldenfels Bros.**, P.O. Box 1917, Corpus Christi, Tex., CA **$787,142**, flexible base, b. conc. 2.912 mi. Hy. SH 9 and US 77. Proj. F 657 (14), San Patricio and Nueces Counties;
Tex.—**Killian-House Co.**, 4600 Broadway, San Antonio, Tex. CA **$1,096,094**, flexible base, hot mix b. conc. 3.249 mi. Hy. Loop 13. Proj. F 1075 (6), Bexar Co.;
Tex.—**L. H. Lacy Co.**, 5630 Zale Blvd., Dallas, Tex. CA **$927,984**, grading, structures, G.C. and S.F. Ry. overpass, Hy. US 82. Proj. F 595 (17), F 549 (7), F. FG 549 (8), Cooke Co.;
Tex.—**Texas Bitulithic Co.**, P.O. Box 10365, Dallas, Tex. CA **$1,092,126**, flexible base, c. conc. pavement, hot mix b. conc. pavement 0.714 mi. Hy. Loop 217, Proj. U-1101 (6) and U-UG 1101 (7), Tarrant Co. Grand total $3,903,346. Bids Sept. 11, awarded Sept. 19. CD 9/17, under LB.

▲ **Spaw-Glass, Inc.**, 2411 Times Blvd., Houston, Tex. CA **$1,196,838**, est. $1,150,000. 600 ft. open steel, concrete type wharf, HOUSTON, TEX. Port Comn., Wharf No. 3, Houston, Tex. Bids Aug. 30. CD 9/11, under LB.

† **Elton E. Peterson**, Casper, Wyo., CA **$631,442**, est. $700,000. grade, base, bit. surf. and bridge 1.7 mi. West Side Hy. Proj. 3A, Teton Co., WYOMING. Bureau P. Rds., Dpt. Commerce, Bldg. 40, Denver Federal Center, Denver, Colo. Bids Sept. 13, awarded Sept. 14. CD 9/19, under LB.

▲† **Robert E. McKee, General Contr., Inc.**, 211 Washington Ave., Santa Fe, N. M. CA **$14,370,000**. 328,750-sq. ft. Cadet Quarters Bldg., Air Force Academy, COLORADO SPRINGS, COLO. Dpt. Air Force, P.O. Box 1670, Colorado Springs, Colo. Bids Sept. 11, awarded Sept. 14. CD 9/14, under LB.

BUILDINGS—LB & CA

▲ **Watson Constr. Co.**, Baker Bldg., Minneapolis, Minn. LB Est. $3,000,000. (10 bidders) general constr., central WAREHOUSE and MANUFACTURING BLDG. west of Douglas Dr. and north of Minneapolis, Northfield & Southern Ry. tracks, GOLDEN VALLEY (P.O. MINNEAPOLIS), MINN. Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn. Bids Sept. 17. CD 8/21.

▲ **Johnson, Drake & Piper, Inc.**, Baker Bldg., Minneapolis, Minn. CA **$8,000,000**. PLANT, incl. three 1 story bldgs., administration, boiler installations, warehouse totaling 565,000 sq. ft., ROCHESTER, MINN. International Business Machines Corp., 590 Madison Ave., New York 22, N. Y. CD 3/19.

▲† **Parsons Constr. Co.**, 2512 Deer Park Blvd., Omaha, Neb., LB $1,506,100 (3 bidders) construction only of COURT HOUSE and POST OFFICE, COUNCIL BLUFFS, IOWA. General Services Admin., P. Bldgs. Service, 2306 East Bannister Rd., Kansas City, Mo. Bids Sept. 18. CD 8/9;
Uteck Corp., Dallas, Tex., LB **$1,800,006**, construction and financing of court house and post office, (Council Bluffs, Iowa).

▲ **Weitz Co.**, Inc., 406 Fleming Bldg., Des Moines, Iowa. LB **$2,397,000**. general contract converting building into TECHNICAL SCHOOL, DES MOINES, IOWA. Bd. Educ., 629 3 St., Des Moines, Iowa. Bids Sept. 11. CD 8/3;
A. J. Allen Plumbing & Heating Co., 623 6 St., Des Moines, Iowa. LB **$663,400**. mechanical work (Des Moines, Iowa).

▲ **Herdlein, Bumiller, Meyersieck**, 2604 Cherokee St., St. Louis 18, Mo. Owner Builds. **$1,000,000**. 140 addnl. RESIDENCES in Oak Crest subdivision, off Bid Bend Rd. via Spellman Dr., CREST WOOD (ST. LOUIS 23 P.O.), MO.

Parsons Constr. Co., 2512 Deer Park Blvd., Omaha, Neb. CA **$952,450**. CA general constr., Creighton HIGH SCHOOL (Prep School) 72nd and Western Ave., OMAHA, NEB. Creighton University, 27 and Hamilton Sts., Omaha, Neb. Bids Sept. 11. CD 9/18, under LB.

▲ **Peter Kiewit Sons Co.**, 1024 Omaha Natl. Bank Bldg., Omaha, Neb., CA Est. $30,000,000. PLANT, near OMAHA, NEB. Western Electric Co., 195 Broadway, New York, N. Y.

▲ **Charles M. Dunning Co.**, 418 N. Hudson St., Oklahoma City 2, Okla. LB **$1,263,270**, est. $1,132,000. U. S. Grant HIGH SCHOOL addn., OKLAHOMA CITY, OKLA. Bd. Educ., 900 N. Klein St., Oklahoma City, Okla. Wright & Selby, Hightower Bldg., Oklahoma City, Okla., archts. CD 3/30.

Walter Kidde Constructors, Inc., 1205 Holman St., Houston, Tex. CA Est. **$500,000**. concrete atomic radiation LABORATORY to develop refinery processes, PONCA CITY, OKLA. Continental Oil Co., P.O. Box 2197, Houston, Tex. Walter Kidde Nuclear Laboratories, 975 Stewart Ave., Garden City, N. Y., engrs. CD 1/4/52.

Southwestern Constr. Co., Box 1204, Houston, Tex. CA **$534,430**. HOME FOR AGED, HOUSTON, TEX. Sisters of Charity of The Incarnate Word, 6510 Lawndale St., Houston, Tex. Bids Aug. 15. CD 8/8.

▲ **Marshall Constr. Co.**, 1811 Crawford St., Houston, Tex. CA **$962,490**, GEOLOGY BLDG., CA **$1,009,000**, BIOLOGY BLDG., HOUSTON, TEX. Rice Institute, Main St., Houston, Tex. Bids Sept. 7. CD 9/19, under LB.

Doss-Blackmon Constr. Co., Mineral Wells, Tex. Own Forces. **$500,000**. 1 story, brick, tile, concrete SHOPPING CENTER, Hy. 183, HURST, TEX. CD 8/2.

D. W. Marshall Constr. Co., Box 32, Victoria, Tex. CA **$697,500**. CHURCH, SCHOOL, RECTORY, VICTORIA, TEX. Most Rev. Robert E. Luckey, Archbishop, 230 Dwyer Ave., San Antonio, Tex. Bids Sept. 5. CD 8/30.

▲ **Procon, Inc.**, 23 E. Jackson St., Chicago, Ill. CA Est. **$1,000,000**. modernize REFINERY, constr. CATALYTIC CRACKING UNIT, GREAT FALLS, MONT. Phillips Petroleum Co., north of Great Falls, Mont.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Los Angeles**—BA 10/16—Bd. Superes. Los Angeles Co., Hall of Records, bridge and impvt. Slauson Ave. over San Gabriel River, Santa Fe & Southern Pacific Rys. $1,000,000. Plans deposit $5.20.

BUILDINGS—SLC

▲ **Calif., Palo Alto**—MANUFACTURING—Varian Assoc., 611 Hanson Way, soon lets contract 2 story, 125,000 sq. ft. rein.-con. vacuum tube mfg. bldg., consist. of research laboratories of cafeteria and processing and mfg. Stanford Industrial Tract, $1,500,000. Michael Gallis, 414 Mason St., San Francisco, archt. Isadore Thompson, 133 Kearny St., San Francisco, engr. CD 7/19.

HEAVY CONSTRUCTION—LB & CA

▲† **Strong Constr. Co.**, Springville, Utah, CA **$1,156,224**. first 5-mile section of 25-mi. access road to Glen Canyon Dam, site from Bitter Springs, ARIZONA, Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. CD 8/21, under LB.

▲ **Baker-Anderson Corp.**, 12420 S. Bloomfield Ave., Norwalk, Calif., CA **$4,930,000**. Section A and Section B, Unit II, North Central Outfall Sewer, LOS ANGELES, CALIF. Bd. P. Wks. City Hall, Los Angeles, Calif. Bids Sept. 12, awarded Sept. 14. CD 9/19, under LB.

Trepte Constr. Co., 2001 Kettner Blvd., San Diego, Calif., LB **$869,348**, Earl Thomas Reservoir, SAN DIEGO, CALIF. City, Water Dpt., Civic Center, 1600 Pacific Hy., San Diego, Calif. Bids Sept. 14. CD 8/13.

BUILDINGS—LB & CA

▲ **Pennsylvania Engineering Corp.**, New Castle, Pa., CA, 3rd installation top blown OXYGEN STEEL CONVERTERS, FONTANA, CALIF. Kaiser Engineers Div. of Henry J. Kaiser Co., 1924 Broadway, Oakland, Calif. CD 5/23/56, under CA.

St. John Constr. Co., 5121 W. Jefferson Blvd., Los Angeles, Calif., LB **$881,536**, est. $695,000 (4 bidders) GYMNASIUM, SWIMMING POOL, CLASSROOMS, PHYSICAL EDUCATION FACILITIES, at Inglewood High School, INGLEWOOD, CALIF. Inglewood Unified School Dist., 111 N. Grevillea Ave., Inglewood, Calif. Bids Sept. 17.

† **Hilp & Rhodes**, 918 Harrison St., San Francisco, Calif., CA **$772,626**. BUILDING 112 addn., incl. laboratory, office space, vault and library, LIVERMORE, CALIF. U. S. Atomic Energy Comn., Eng. Div., 518 17 St., Oakland, Calif. Awarded Sept. 14. CD 9/20, under LB.

Erickson Constr. Co., 1119 E. Bassettlaw Ave., North Sacramento, Calif., LB **$571,408**. general contract 1 story, 68,000 sq. ft., rein.-conc. SHOPPING CENTER, El Camino and Watt Sts., SACRAMENTO, CALIF. El Camino Investment Co., c/o B. I. Lusk, 2450 Watt St., Sacramento, Calif. CD 9/6.

▲ **George A. Fuller Co.**, 3100 W. 8th St., Los Angeles, Calif., CA **$1,000,000**. rein.-con. WAREHOUSE and OFFICE, SOUTH SAN FRANCISCO, CALIF. Sperry & Hutchinson, c/o contractor. John S. Balles, Pier 5, San Francisco, Calif., archt. Awarded Sept. 14.

CANADA

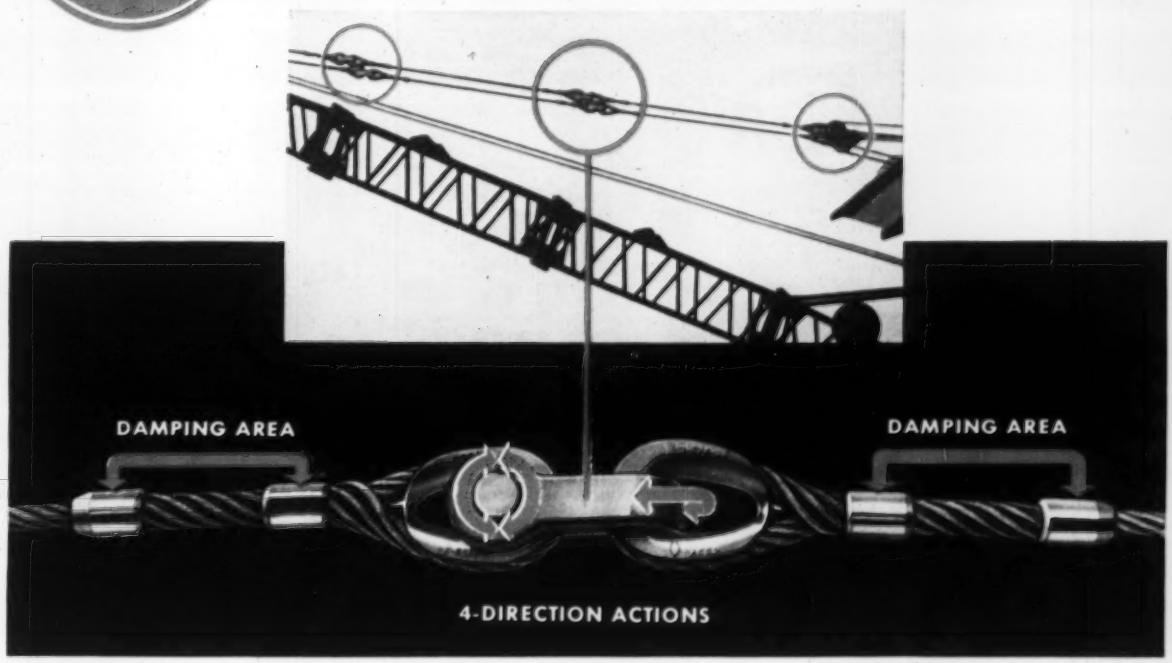
HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria,
Ben Ginter Constr. Co. Ltd., Prince George, B. C., CA, **$1,956,176**. Proj. 776, 22.9 mi. Elko-Roosville Hy. Fernie Electoral District. CD 9/6, under LB.

(Continued on page 120)

an ACCO product

ACCO Registered* Dualoc Boom Cables



Why You Need ACCO Registered Boom Cables on Your Equipment:

...Every Buckled or Dropped Boom Results from Boom Cable Failure

Failure results from either overloading or fatigue. You can avoid overloading, but fatigue occurs every time vibration is stopped suddenly in a wire rope and it is practically impossible to measure how badly the rope is fatigued before failure occurs.

Because vibration in a boom cable occurs in more than one plane, any type of connector which can move in a single plane only, forces the wire rope to stop vibration in all other planes. Therefore, fatigue is set up.

ACCO Registered Boom Cable Connectors give movement in FOUR DIRECTIONS and thus change fatigue to wear, which can be measured easily.

To decrease the amount of this wear and to absorb any vibration which might not be handled by the connectors, ACCO Registered Boom Cables use the damping action of the patented DUALOC ending which absorbs the vibration over a considerable area without dangerously localized fatigue.

ONLY ACCO REGISTERED BOOM CABLES protect your investment through their following Exclusive Features:

1. FOUR-DIRECTIONAL MOVEMENT BY CONNECTORS
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34 warp threads of full length synthetic, dimensionally stabilized yarn.

Here's a woven tape that approaches the accuracy of metal tapes. Made from continuous, synthetic, dimensionally stabilized fibres that are non-conductive and have high dielectric strength. The thirty-four lengthwise warp strands are interwoven with endless cross strands so that there are no ends to fray on the edges. Attractive leather case with rust-resistant steel liner. 25 to 150 foot lengths.

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(Continued from page 118)

▲ Canadian Vickers Ltd., Maissonneuve, Montreal, Que., CA, $4,269,825. mitre gates at locks of St. Lawrence Seaway, ONTARIO and QUEBEC. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Sept. 18. CD 9/24, under LB.

BUILDINGS—LB & CA

▲ Thomas Fuller Constr. Ltd., 190 Richmond Rd., Ottawa, Ont. CA $6,330,765. (3 bidders) 8 story, bsmt., I-shaped GEOLOGICAL BLDG., Booth St., OTTAWA, ONT. Dpt.-P. Wks., Hunter Bldg., Ottawa, Ont. CD 9/26/55.

▲ Bouchard & Gravel, Inc., 150 rue Jean Dufresne, Jonquiere, Que. CA Est. $1,500,000. CLASSICAL COLLEGE, JONQUIERE, QUE. Les Peres Oblats de Marie, Immaculee, Bursar's Office, 3456 Avenue, Ontario, Montreal, Que. Dauphinais & Belanger, 582 Blvd. Lamarche E., Chicoutimi, Que., engrs. CD 1/6/56.

▲ A. N. Bail Co. Ltd., 1440 St. Catherine St. W., Montreal, Que. CA $1,760,000. (9 bidders) 2 story, bsmt.-rein.-con. fdn. pulp and paper RESEARCH INSTITUTE of Canada, at Pointe Claire, MONTREAL, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Aug. 22, awarded Sept. 14. CD 8/28, under LB.

▲ Leon M. Adler, 2200 Ward Ave., Montreal, Que. CA $1,000,000. SHOPPING CENTER, northern outskirts of town, ST. JEROME, QUE. Maxwell Cummings Sons, 1390 Sherbrooke St. E., Montreal, Que. Bids Aug. 15, awarded Sept. 14. CD 9/6, under LB.

LATIN AMERICA

BUILDINGS—LB & CA

▲ Black, Sivalls & Bryson, Inc., 7500 E. 12 St., Kansas City, Mo., CA Est. $2,200,000. eleven SILOS and WAREHOUSES, BRAZIL. Govt. of Brazil, Rio de Janeiro, Brazil.

PROPOSED PROJECTS

WATER SUPPLY

▲ N. Y., Rome—City Council, City Hall, constr. fish creek storage dam, $1,500,000. Malcolm Pirnie, Engr., 25 W. 43rd St., New York, N. Y., consult. engrs.

Okla., Clinton—City, City Hall, voted bonds, well water supply, $680,000. C. H. Guerusey & Co., 2701 N. Oklahoma City, consult. engr. CD 8/29.

SEWERS, WASTE DISPOSAL

Conn., Plainville—Town, Town Hall, sanitary sewers Mountain View Area, $521,000.

▲ Mich., Pontiac—City, City Hall, sewage treatment plant consisting of new Imhus tank at existing site, interceptor to new 4.5 m.g.d. activated sludge plant 1 mi. downstream, sludge dewatering and incineration at new plant for all sludge produced, $2,650,000. Jones, Henry & Williams, Security Bldg., Toledo, O., engrs.

▲ N. Y., Paris—Town, Town Hall, sewerage sys. $1,037,000. William S. Lozier, 10 Gibbs St., consult. engr. CD 9/5/55.

▲ N. Y., Syracuse—Bd. Supervs. Onandaga Co. Lakeland trunk sewer, Nine-Mile Creek pumping station and force mains, $1,700,000.

▲ O., Ashland—City, City Hall, impry. sewerage sys., $1,020,000. CD 1/12.

Va., Falls Church—City, 151 E. Broad St., bond election Nov. 6, street and storm drainage work $595,000. CD 1/15/53.

▲ Wash., Ronald—Ronald Sewer Dist., Richmond Highlands, Ronald, bond election Nov. 6, sewerage sys. and treatment facilities, $5,300,000. Hill & Ingman, 1728 E. Madison St., Seattle, consult. engrs. CD 11/20/51.

BRIDGES

▲ Conn., Hartford—Hartford Bridge Auth., 11 Asylum St., Hartford.

Glastonbury—Wethersfield bridge approach from Relocated Rte. 9, Wethersfield, approaches from Glastonbury Expressway to east end of bridge with overpasses at Naubuc Ave. and Main St., Glastonbury, $5,844,000. Edward B. Burdick, c/o owner, engr. DeLeuw, Cather & Brill, Inc., 202 E. 44 St., New York, N. Y., consult. engr. CD 4/21.

▲ OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5.

Johnston Co.—2 concrete, steel bridges, U. S. Hy. 70, $190,000.

Leflore Co.—3 concrete, steel bridges, U. S. Hy. 270, Stapp, $200,000.

Mayes Co.—3 concrete, steel bridges, SH Hy. 82, Locust Grove, $250,000.

McCurtain Co.—3 concrete, steel bridges, SH Hy. 21, Broken Bow, $190,000.

Stephens Co.—2 concrete, steel bridges, SH Hy. 7, in Marlow, $200,000.

Tulsa Co.—3 concrete, steel bridges, U. S. Hy. 66, Tulsa, $560,000.

1 concrete, steel bridge, U. S. Hy. 66, Tulsa, $100,000 G. H. Bittle, c/o owner, engr.

▲ Virginia—Chesapeake Bay Ferry District Comm., Box 120, Norfolk.

24 mi. low level bridges and tunnel across Chesapeake Bay, from eastern shore to Norfolk, $100,000,000. Sverdrup & Parcel Eng. Co., 1234 Locust St., St. Louis, Mo. will make feasibility study. Wilbur S.

(Continued on page 122)

Contractor Takes Tractair to Church and Solves Unusual Construction Problem

Remodeling of this large church depended on plenty of air power.

"Inside" job was confined, crowded, with poor footing.

Here's how a construction firm found the answer with a Le Roi Tractair.

A self-propelled Le Roi Tractair compressor went to church recently to help the Caspian Construction Company of Caspian, Michigan with an unusual air-power problem.

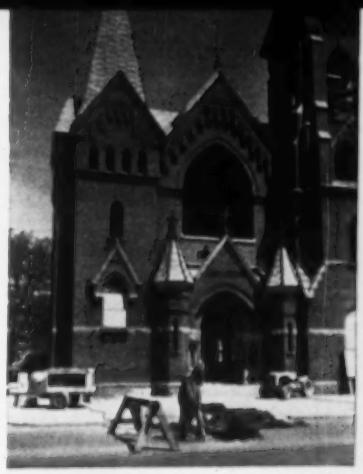
The job was different and difficult. St. Mary's Church in Wausau, Wisconsin was to be remodeled inside, from the ground up. Plenty of air power was needed to work essential tools. But long hose wouldn't work because of friction loss and danger of abrasion from debris. Not even small trucks could get inside the building.

To solve the problem, a Le Roi 125 Tractair, capable of working in crowded conditions . . . maneuvering in tight corners . . . "stepping" through loose, deep sand, was driven into the church. In this way continuous air power was provided for the job, without tying up additional equipment or men.

The contractor states, "The Tractair was a life-saver on this job, due to the fact that it is so mobile. It did a very fine job for us and served all of our needs at a very low cost of operation."

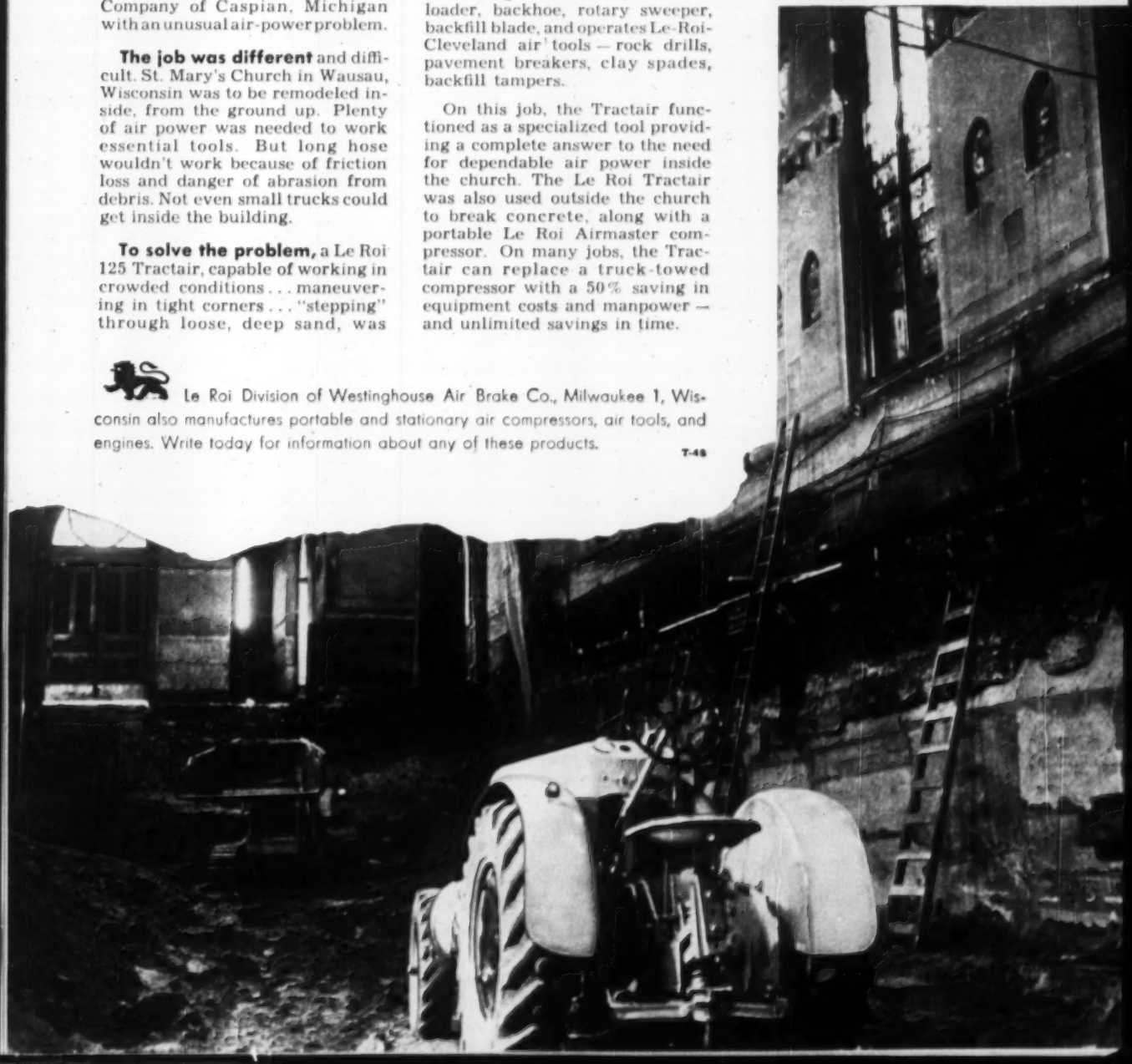
Ready to work at any job. Tractair, a combination 42-hp wheel tractor and 125-cfm air compressor, can be equipped with a variety of drilling attachments, front-end loader, backhoe, rotary sweeper, backfill blade, and operates Le-Roi-Cleveland air tools — rock drills, pavement breakers, clay spades, backfill tampers.

On this job, the Tractair functioned as a specialized tool providing a complete answer to the need for dependable air power inside the church. The Le Roi Tractair was also used outside the church to break concrete, along with a portable Le Roi Airmaster compressor. On many jobs, the Tractair can replace a truck-towed compressor with a 50% saving in equipment costs and manpower — and unlimited savings in time.



(Above) Work outside St. Mary's church in Wausau, Wis., used Le Roi Tractair and Le Roi Airmaster compressor to break concrete.

(Below) Inside church, Le Roi Tractair provided air power when and where needed because it can move about in confined, crowded places.



Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin also manufactures portable and stationary air compressors, air tools, and engines. Write today for information about any of these products.

T-48

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3545 LINDELL BLVD., ST. LOUIS 3, MO.
Milwaukee and Twin Cities Denver New Orleans

(Continued on Page 120)

Smith & Assocs., 265 Church St., New Haven, Conn., is making traffic study.

STREETS AND ROADS

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford.

North Canaan—relocation of Route U. S. 7 incl. 5 grade separations, structures and interchange with Route U. S. 44, $2,000,000. Philip W. Genoves & Assocs., 249 Elm St., New Haven, consult. engrs. CD 5/25.

▲ **Mich., Mount Clemens**—Bd. Road Comrs. Macomb Co., Roy Conner, chn., County Bldg., improve 250 mi. county roads, $12,000,000.

▲ **Mo., St. Louis County**—St. Louis County, Luman F. Matthews, co. superv., Court House, Clayton, Zone 5, opening and constr. of Innerbelt Hy. across county, total distance 18 mi. $16,000,000. Sverdrup & Parcel Eng. Co., 1234 Locust St., St. Louis, Zone 1, consult. engr.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5.

Atoka Co.—surf. 1.21 mi. Hy. 69, Atoka, $355,000.

Beckham Co.—grade, drainage 2.87 mi. US Hy. 66, Sayre, $800,000.

grade, drainage 5.5 mi. SH Hy. 6, Retrop, $160,000.

Bryan Co.—grade, drainage 6.8 mi. SH Hy. 70, Roberta, $126,000.

Caddo Co.—grade, drainage 4 mi. SH Hy. 8, Anadarko, $200,000.

Cimarron Co.—grade, drainage 11.57 mi. SH Hy. 114, Boise City, $500,000.

Creek Co.—grade, drainage 5.22 mi. SH Hy. 77, Shamrock, $125,000.

Dewey Co.—surf. 5 mi. SH Hy. 47, Butler, $142,000.

surf. 5 mi. SH Hy. 47, Alado, $133,000.

Garfield Co.—surf. 4 mi. US Hy. 64, Enid, $495,000.

Grady Co.—surf. 2.43 mi. US 81, Chickasha, $1,346,000.

surf. 1.11 mi. US Hy. 81, Chickasha, $400,000.

Grant Co.—grade, drainage 6.45 mi. SH Hy. 11, Medford, $60,000.

Greer Co.—surf. 8.74 mi. SH Hy. 6, Granite, $160,000.

Johnston Co.—grade, drainage 5.3 mi. US Hy. 70, $200,000.

Latimer Co.—grade, drainage 5.81 mi. SH Hy. 2, Wilburton, $500,000.

Leflore Co.—grade, drainage 10.2 mi. US Hy. 270, Stapp, $323,000.

Love Co.—surf. 1 mi. Hy. US 77, Marietta, $65,000.

Mayes Co.—grade, drainage 5.5 mi. SH Hy. 82, Locust Grove, $200,000.

McAlester Co.—surf. 4.96 mi. US Hy. 69, Pittsburgh, $948,000.

McClain Co.—grade, drainage 6.7 mi. US Hy. 77, Gooldsby, $750,000.

McCurtain Co.—grade, drainage 5.88 mi. SH Hy. 21, Broken Bow, $150,000.

Nowata Co.—surf. 1.6 mi. US 60, Nowata, $75,000.

grade, drainage 2.61 mi. SH Hy. 10, Lenapah, $65,000.

Okfuskee Co.—grade, drainage 8.01 mi. US Hy. 62, Paden, $230,000.

Oklahoma Co.—grade, drainage 3.5 mi. US Hy. 77, Oklahoma City, $1,320,000.

surf. 0.44 mi. US Hy. 270, Oklahoma City, $60,000.

grade, drainage 2.79 mi. US Hy. 77, Oklahoma City, $1,300,000.

Pontotoc Co.—surf. 1.16 mi. SH Hy. 3, Ada, $375,000.

Sequoyah Co.—surf. 3.9 mi. Hy. US 64, Moffett, $487,000.

Stephens Co.—grade, drainage 1.76 mi. SH Hy. 7, Marlow, $150,000.

Tulsa Co.—grade, drainage 3.25 mi. US Hy. 66, Tulsa, $200,000. G. H. Bittle, c/o owner, engr.

▲ **TENNESSEE**—State Hy. Dpt., Nashville.

Shelby Co.—15 mi. expressways, Memphis $15,000,000. Harland Bartholomew & Assocs., 317 N. 11 St., St. Louis 1, Mo., preliminary engineering report and plans and spec. Clark & Daily, Urbana, Ill., structural design of bridges.

▲ **Tex., Angleton**—Brazoria Co., new road constr. and paving, $700,000; road maintenance, repairing, reconstr., $800,000. CD 6/26.

▲ **Tex., Orange**—Comrs. Orange Co., Court House, Orange, public roads sys. approx. 160 mi. $4,940,000. CD 6/20.

▲† **WASHINGTON**—U. S. Forest Service, Dpt. Agriculture, 14 St. and Independence Ave. S. W., Wash. 25, D. C.

Skamania Co.—timber access road to upper Lewis River area of Gifford Pinchot National Forest $4,000,000.

▲ **Alta., Edmonton**—City, City Hall, ratepayers vote Oct. 17 on bylaw paving on arterial and residential streets. $1,000,000.

Alta., Edmonton—City, City Hall, ratepayers vote Oct. 17 on bylaw for asphalt surfacing on gravel roads. $950,000.

EARTHWORK, WATERWAYS

▲† **Kentucky**—U. S. Eng., 830 W. Broadway, Louisville, Lock and Dam 41 Ohio River, lock 110x1,200 ft., all equip., incl. cofferdam, 2,000 ft. long, 55 ft. high, Louisville, Jefferson Co. $10,000,000. ($800,000 appropriated). To go ahead in 1957.

▲† **Kentucky**—U. S. Eng., 830 W. Broadway, Louisville, dam and spillway, rolled earth, fill dam with upstream rock protection, stream diversion, road over spillway and dam, Rough River Reservoir, Breckenridge and Grayson Counties. $1,000,000 appropriated.

▲† **Oregon**—U. S. Eng., 628 Pittock Block, Portland, The Dalles Dam. $42,457,000 appropriated.

(Continued on page 125)

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MODEL	T-10	T-14	T-15	T-30-2	T-30-6
Diameter — in. nom.	9	11.5	15.25	15.25	16
Length — in.	9	14.12	16.75	17.25	21.75
Weight — lb.	40	95	125	135	195
Output — lb/min. (Standard Conditions)	25-40	35-65	35-65	70-95	115-175

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AiResearch Industrial Division

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DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND SPECIALIZED INDUSTRIAL PRODUCTS

(Continued from page 122)

▲† Texas—U. S. Eng., Box 1600, Fort Worth, embankment for Canyon Reservoir, in Comal Co., Guadalupe River; outlet works for Canyon Dam. $1,600,000 appropriated. Bids about December, 1956. CD 6/9/44.

AIRPORTS

▲† Ariz., Phoenix—RUNWAY—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., plans by Johannessen & Girand, 415 Central and Washington Bldg., 3,500 ft. concrete southwest end of the northernmost parallel NE-SW Runways exten., Luke Air Force Base. $2,000,000. CD 8/23.

† Me., Brunswick—QUARTERS—First Naval Dist., 495 Summer St., Boston, Mass., plans by Coletti Bros., 687 Boylston St., Boston Mass. bachelor officers' quarters and mews, U. S. Naval Air Station, (Second increment), $600,000. CD 8/27.

Mo., Springfield—AIRPORT—City, Bart Avery, Mgr., City Hall, $300,000 bond election Nov. 27, administration bldg. and extensions and improvs. at municipal airport. $600,000. CD 8/16/55.

▲ O., Columbus—AIRPORT—City, City Hall, voted bonds Sept. 14, Port Columbus Airport. $3,975,000. CD 7/6.

▲† O., Dayton—APRON PARKING, etc.—U. S. Eng., 830 W. Broadway, Louisville, Ky., apron parking, 63,750 sq. yds. rein.-con. paving, b. conc. stabilized shoulders, storm drainage, fuel dispensing sys., water hydrant lighting, $1,000,000; 1 story, 9,200 sq. ft. Test A/C and Missile, $1,000,000; 3,500 sq. ft. permanent, non-combustible high altitude training bldg. addn., etc., $70,000; two 3 story 25,900 sq. ft. each permanent non combustible airmens dormitories, central heating plant, site preparation, utilities, $1,000,000. Bids October 1956; 3 story, 89,000 sq. ft. 196-men officers quarters, incl. walks, parking area, utilities, steam heating from central distr. sys., Approx. $1,000,000. Bids November 1956 at Wright-Patterson Air Force Base. CD 8/22.

▲ Utah, Salt Lake City—ADMINISTRATION BLDG.—Salt Lake City Corp., City-County Bldg., plans by Ashton, Evans & Brazier, 24 S. W. Temple St., administration bldg. at airport. $3,750,000. Bids in 1958. CD 8/26/54.

PUBLIC BUILDINGS

Ala., Chatom—HOUSING—Chatom Housing Auth., Chatom, plans by T. Cooper Van Antwerp, 354 St. Francis St., Mobile, 44 housing units. $550,000. G. B. Espy, Jr., Jackson, Ala., engr. CD 4/1/52.

Ala., Enterprise—HOUSING UNITS—Enterprise Housing Auth., Enterprise, plans by Bond & Bond, Carter Hill Rd., Montgomery, 50 housing units. $500,000. Bids in March.

Ala., Fayette—HOSPITAL—Fayette County Hospital, Fayette, plans by Charles H. McCauley, Jackson Bldg., Birmingham, Zone 3, county hospital addn. $535,000. CD 8/16.

▲† Ala., Tuskegee—HOSPITAL, etc.—Veterans Admin., Munitions Bldg., Wash., D. C., buildings and utilities addns., alterations. $1,500,000-$2,000,000.

Ala., Wetumpka—HOSPITAL—Elmore County Hospital, Wetumpka, plans by Charles H. McCauley, Jackson Bldg., Birmingham, county hospital addn. $500,000.

▲ Calif., Hawthorne—SCHOOL—Centinela Valley Union High School Dist., 365 Hawthorne Way, plans by Llewelling & Moody, 766 Colorado Blvd., Los Angeles, Hawthorne High School addns. $1,266,463.

Calif., West Covina—SCHOOL—Bd. Educ., West Covina School Dist., West Covina, plans by Llewelling & Moody, 766 Colorado Blvd., Los Angeles, Monte Vista School. $555,000. CD 2/10.

▲ Conn., New Haven—COURT HOUSE—Comrs. New Haven Co., 121 Elm St., plans by Carl R. Blanchard, Jr., 111 Whitney Ave., court house. $4,400,000. Douglas Orr, 111 Whitney Ave., consult. engr. CD 2/3.

Conn., Somers—SCHOOL—Town, Town Hall, plans by Olson, Miller & Assocs., 742 Asylum Ave., Hartford, high school, $700,000. John P. Legnos, 30 Gillett St., Hartford, consult. engr., CD 9/7.

▲ D. C., Wash.—SCHOOLS—Bd. Educ., Franklin School, Wash., D. C., Kenilworth Elementary School addn. $700,000; elementary school, 56 and Eades Sts. N.E., $818,000; elementary school, 6 and Chesapeake Sts. N.W. $857,000; elementary school, Texas Ave. and Burns St. S.E., $875,000; senior high school in Congress Heights, $4,000,000.

Fla., Fort Lauderdale—HOUSING—Fort Lauderdale Housing Auth., plans by Robert G. Jabelka, 701 E. Broward St., 84 housing units, $800,000.

▲ Fla., Miami—HOME and HOSPITAL—Comrs. Dade Co., Court House, $1,500,000 bond election Nov. 6, Dade County Home and Hospital expansion program in Kendall. CD 12/2/55.

▲ Fla., Miami—HOSPITAL EXPANSION—Comrs. Dade Co., Court House, $7,500,000 bond election Nov. 6, Jackson Memorial Hospital expansion program. CD 12/2/55.

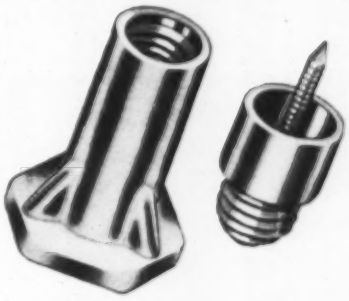
▲ Fla., Miami—HOUSING—Miami Housing Auth., J. T. Knight, exec. dir., 327 N.W. 62 St., plans by Steward & Skinner, 223 S.E. 1 St., 148-unit housing N.W. 83 to 85 Sts. from 5 Ave. to 6 Court. Over $2,000,000.

▲ Fla., Palatka—SCHOOL—Putnam County School Bldg., Palatka, plans by Goin & Moore, 518 N.E. 4 Ave., Gainesville, Junior High School. $1,500,000.

▲ Fla., Plant City—HOUSING—Plant City Housing Auth., plans by Thomas V. Talley, Lakeland, 200 housing units. $1,856,000.

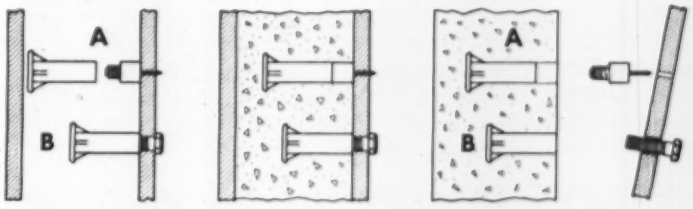
Provide for Fastenings to Concrete Before Concrete is Cast

PD Concrete Inserts Save Time and Labor



Fastenings to pre-cast, pre-stressed concrete products can be made by simply spacing PD Inserts at predetermined positions in wood or steel forms. STAR PD Concrete Inserts are precision die-cast of non-corrosive zinc alloy having holding powers from 100 to 2,500 lbs.

Write Dept ER-8 for details



① A—Fasten Plug to wood form with nail. or B—Bolt concrete insert to steel form.

② PD Concrete Insert set in concrete — will not move if concrete is vibrated.

③ A—Strip wood form in conventional way. Remove Plug and re-use. or B—Remove bolt and strip steel form.

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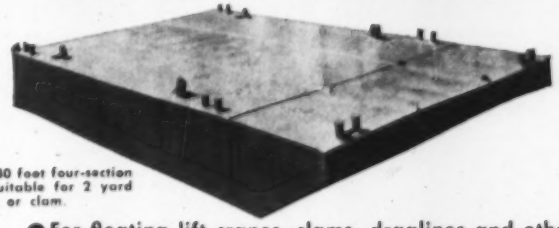

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▲ **Ga., Augusta**—HOUSING—Augusta Housing Auth., Augusta, plans by Scroggs & Ewing, 1331 Greene St., and F. Arthur Hazard, Marion Bldg., Proj. GA 1-5, 250 dwelling units, exceeds $2,000,000; plans by Eve & Stulb, Masonic Bldg., and Kuhlke & Wade, 122 8th St., Proj. GA 1-6, 275 dwelling units, exceeds $2,000,000. Bids February or March 1957.

Ga., Camilla—HOUSING—Camilla Housing Auth., plans by C. A. Smith, Loew's Grand Theatre Bldg., Atlanta, 50 housing units, $595,000. Robert O. Bradley Co., Albany, consult. engrs. CD 7/28/52.

Ga., Summerville—HOUSING—Summerville Housing Auth., plans by Ayers & Godwin, Bona Allen Bldg., Atlanta, 80 housing units, $800,000. CD 1/13/53.

▲† **Idaho, Arco**—BUILDING, etc.—Atomic Energy Comn., Idaho Operations Office, Idaho Falls, buildings, utilities and other facilities in SPERT III area of National Reactor Testing Station, incl. 50x80 ft. structural steel reactor building. $1,000,000. Bids this month. CD 3/24/49.

▲ **Ill., Belleville**—COUNTY NURSING HOME—Bd. Supervs. St. Clair Co., Court House, $1,100,000 bond election Nov. 6, 1 story multi-winged of 140 bed capacity, brick, rein.-con. county nursing home, Collinsville Ave., Swansea, adjacent to Belleville. CD 8/31/54.

▲ **Ill., Oak Park**—SCHOOLS—Bd. Educ. Dist. 200, East Ave. and Ontario St., plans by Shaw Metz & Dolio, 208 S. LaSalle St., Chicago, 3 story, bsmt. brick, stone, Oak Park and River Forest High School addn., East Ave. and Ontario St. $1,500,000.

▲ **Ill., Rockford**—SCHOOLS—City, Bd. Educ., Rockford, plans by Raymond A. Orput, 311 Empire Bldg., Hubbard & Hyland, Gas-Electric Bldg., Bradley & Bradley, Rockford Trust Bldg., and Gilbert A. Johnson, American National Bank Bldg.; all Rockford; 4 schools. $8,389,900. CD 11/9/53.

▲ **Ind., Hobart**—SCHOOL—Hobart Twp. School, c/o Ivan Miesger, trustee, 3452 Central Ave., East Gary, plans by Wildermuth & Wildermuth, 527 Broadway, Gary, 2 story, brick Hobart Twp. High School, Huber Blvd. $1,500,000.

▲ **Ind., Sellersburg**—SCHOOL—Silver Creek Twp. Headquarters, Sellersburg, plans by Walker, Applegate, Oaks & Ritz, 218 Elsby Bldg., Spring and Pearl Sts., New Albany, high school, incl. academic bldg., recreation bldg., auditorium. $1,700,000.

Ind., Terre Haute—ELEMENTARY SCHOOL—Bd. School Trustees, 667 Walnut St., plans by Miller, Vrydagh & Miller, 200 Opera House Bldg., 1 story, 80x326 ft., masonry, structural steel elementary school, $500,000. Homer A. Howe, 204 Opera House Bldg., structural engr.

▲ **Ky., Louisville**—SCHOOLS—Jefferson Co. Bd. Educ., 618 W. Jefferson St., plans by Hartstern, Louis & Henry, McDowell Bldg., brick, concrete Kerrick Elementary School, Pleasure Ridge Park, near Louisville, $500,000; brick, rein.-con. Junior High School, Goldsmith Lane, $600,000; elementary school on Herr's Lane near Westport Rd., $600,000; elementary school, Brown's Lane, $500,000. E. R. Ronald & Assoc., 554 S. Third St., consult. engrs.

▲ **Ky., Mount Sterling**—HOUSING—Mount Sterling Housing Auth. plans by James Allan Clarke, P.O. 230, 82 housing units. $1,018,000. CD 2/6/56.

Ky., Winchester—HOUSING—Winchester Housing Auth., plans by James A. Clarke, Winchester, 54 housing units. $500,000.

La., Bogalusa—HOUSING—Housing Auth., Morton Roche, chn., 1420 N. Columbia Rd., plans by A. Hays Town, 310 Triad Bldg., Baton Rouge, 80 housing units, La 24-5. $710,000.

La., Bunkie—HOUSING—Housing Auth., C. J. Dupont, exec. dir., Town Hall, plans by C. Scott Yeager & Assoc., P. O. Box 1105, Alexandria, 50 housing units, La 62-1, $396,200.

▲ **La., Lake Charles**—HOUSING—Lake Charles Housing Auth., Alva P. Fritch, exec. dir., P. O. Box 934, plans by Matkin & Fritch, 4101 San Jacinto at Cleburne, Houston 4, Tex., 142 housing units, Proj. LA-4-3, $1,338,200; 50 housing units, Proj. LA-4-6, $460,700; 100 housing units, Proj. LA-4-5, $947,000; 108 housing units, Proj. LA-4-4, $1,005,800.

▲ **La., Ruston**—HOUSING—Ruston Housing Auth., plans by L. Milton King, Kusin Bldg., Monroe, 100 brick veneer duplex housing units. $1,135,000.

La., Shreveport—HOUSING—Housing Auth., F. D. Jackson, exec. dir. 2725 Southern Ave., plans by Neild-Somedahl Assoc., 960 Jackson St., 250 housing units, La 2-3, $2,290,000; 250 housing units, $2,000,000. CD 4/8/52.

▲ **Md., Hagerstown**—HOUSING—Hagerstown Housing Auth., plans by Chapman & Lefler, 27 N. Jonathan St., 155 housing units. $1,000,000. CD 2/2/51.

† **Md., Laurel**—WAREHOUSE—D. C. Govt., Director Bldgs. & Grounds, 499 Pa. Ave. N. W., Wash., D. C., warehouse at Childrens Center, $781,000.

▲ **Mass., Swampscott**—SCHOOL—Town, Town Hall, plans by Warren H. Ashley, 967 Farmington Ave., West Hartford, Conn., Junior Senior High School. $1,000,000.

Mich., Adrian—SCHOOL—Madison Township Bd. Educ., Archie Wallace, supt., voted $750,000 bonds Sept. 10, high school. CD 9/17.

▲ **Mich., Bloomfield Hills**—SCHOOLS—Bd. Educ., Bloomfield Hills School Dist., elementary school, $600,000; Junior High School, $750,000.

Mich., Hamtramck—CITY HALL—City Council, City Hall, City Hall. $900,000. J. M. Kopkowski, City Hall, city engr.

Mich., Hastings—HOSPITAL—Bd. Supervs. Barry Co., County Bldg., 104 bed capacity hospital. $700,000.

Mich., Adrian—SCHOOL—Madison School Dist. School Bd., high school. $750,000.

▲ **Minn., Eveleth**—HOSPITAL—City, E. I. Talpale, clk. J. Primozich, chn. Hospital Bd., voted $500,000 bonds Sept. 11, $1,000,000. CD 9/7.

Minn., Minneapolis—SCHOOL—Bd. Educ., H. Held, archt.-engr., 807 N.E. Broadway, plans by Shifflet, Backstrom & Assoc., 17 W. Franklin Ave., Shingle Creek Elementary School along Shingle Creek between 50 and 51 Aves. North and between Newton and Penn Aves. $700,000. (Correction-architects). CD 2/3.

Minn., Mountain Lake—SCHOOL—Bd. Educ., J. F. Eitzen, clk., $955,000 bond election Jan. 25, grade school, $525,000; gymnasium-auditorium addn. to high school, $350,000; other imprvs. Pass, Rockey & Church, Mankato, archts. CD 12/22.

Miss., Aberdeen—HOUSING—Aberdeen Housing Auth. plans by John L. Turner & Assoc., Box 1348, Jackson, 88 housing units, $800,000.

Mo., Springfield—FIRE STATION, etc.—City, Bart Avery, mgr., City Hall, $635,000 bond election Nov. 27, 4 fire stations and police station.

▲ **Nev., Reno**—HOUSING—Reno Housing Auth. plans by John Crider, 225 W. 1st St., 150 housing units, $2,000,000. John A. Bonnell, consult. engr.

▲ **N. J., Bayonne**—HOUSING—Bayonne Housing Auth. plans by Mr. Erwin Gerber, 1180 Raymond Blvd., Newark, 126 housing units, $1,000,000.

N. J., Edison—HOUSING—Housing Authority & Redevelopment Agency, Edison Twp., Middlesex Co., 1036 Amboy Ave., Fords, plans by Ricker & Axt, 6115 Hudson Ave., West New York, 60 housing units. $600,000.

▲ **N. J., Jersey City**—HOUSING—Jersey City Housing Auth., 514 Newark Ave., plans by Kelly & Gruzen, 80 Fifth Ave., New York, N. Y., 712 housing units. $7,000,000. CD 6/27/50.

▲† **N. Y., Bath**—RECREATION AND THEATER—Veterans Admin., Munitions Bldg., Wash., D. C., recreation and theater bldg., alterations to two bldgs. $1,500,000-$2,000,000. CD 10/26/49.

N. Y., Plattsburgh—HOUSING—Plattsburgh Housing Auth. plans by Sargen, Webster, Crenshaw & Folley, Division St., 50 housing units. $500,000.

▲ **N. Y., Syracuse**—HOUSING—Syracuse Housing Auth. plans by Fred O'Connor, 1221 Chimes Bldg., 318 housing units. $3,000,000.

▲ **N. Y., Utica**—AUDITORIUM, etc.—City, City Hall, plans by Gilbert Seltzer of Gerfeon & Seltzer, 101 Park Ave., New York, municipal auditorium and sports arena, $3,000,000.

N. C., Concord—HOUSING—Concord Housing Auth. plans by Bemis Lester, Concord, 60 housing units. $732,858.

N. D., Williston—HOUSING—Williston Housing Auth., Williston, plans by Mr. Myron R. Denbrook Jr., Wells & Denbrook, Box 1440, Grand Forks, N. D., 60 housing units, $600,000. CD 2/5/52.

▲ **O., Columbus**—SCHOOLS—Bd. Educ., 270 E. State St., voted bonds Sept. 14, school addns., imprvs. $12,900,000. CD 6/27.

▲ **O., Columbus**—HOSPITAL EXPANSION and IMPRVS.—Comrs. Franklin Co., Court House, voted bonds Sept. 14, money to be allocated to various units of Columbia Hospital Federation for necessary expansion and imprvs. $15,000,000. CD 6/27.

▲ **O., Columbus**—MEDICAL-SURGICAL UNIT—Dpt. P. Welfare, State Office Bldg., S. Front St., medical-surgical units and regional service unit for Columbus Mental Institutions. $1,560,000 and $700,000, respectively. CD 1/12.

▲ **Okla., Stillwater**—APARTMENTS—Oklahoma Agricultural & Mechanical College, Stillwater, plans by Wright & Selby, Hightower Bldg., Oklahoma City, and Philip A. Wilber & Assocs., Stillwater, apartments. $2,250,000. CD 9/6.

▲ **Ore., Portland**—HIGH SCHOOL—Multnomah School Dist. No. 1, 631 N. E. Clackamas St., plans by Stanton, Boles, Maguire & Church, Concord Bldg., 74 room high school, 86 and Bush Sts. $5,000,000. Bids April 1958.

Pa., Beaver Falls—HOUSING—Beaver County Housing Auth., plans by Frank J. Dickerson, Sabli Bldg., 44 housing units, $650,000.

▲ **Pa., Brownsville**—HOUSING—Brownsville Housing Auth., Brownsville, plans by Altman & Altman, Craig and Derrick Sts., Uniontown, 100 housing units, $1,200,000. Bids in April.

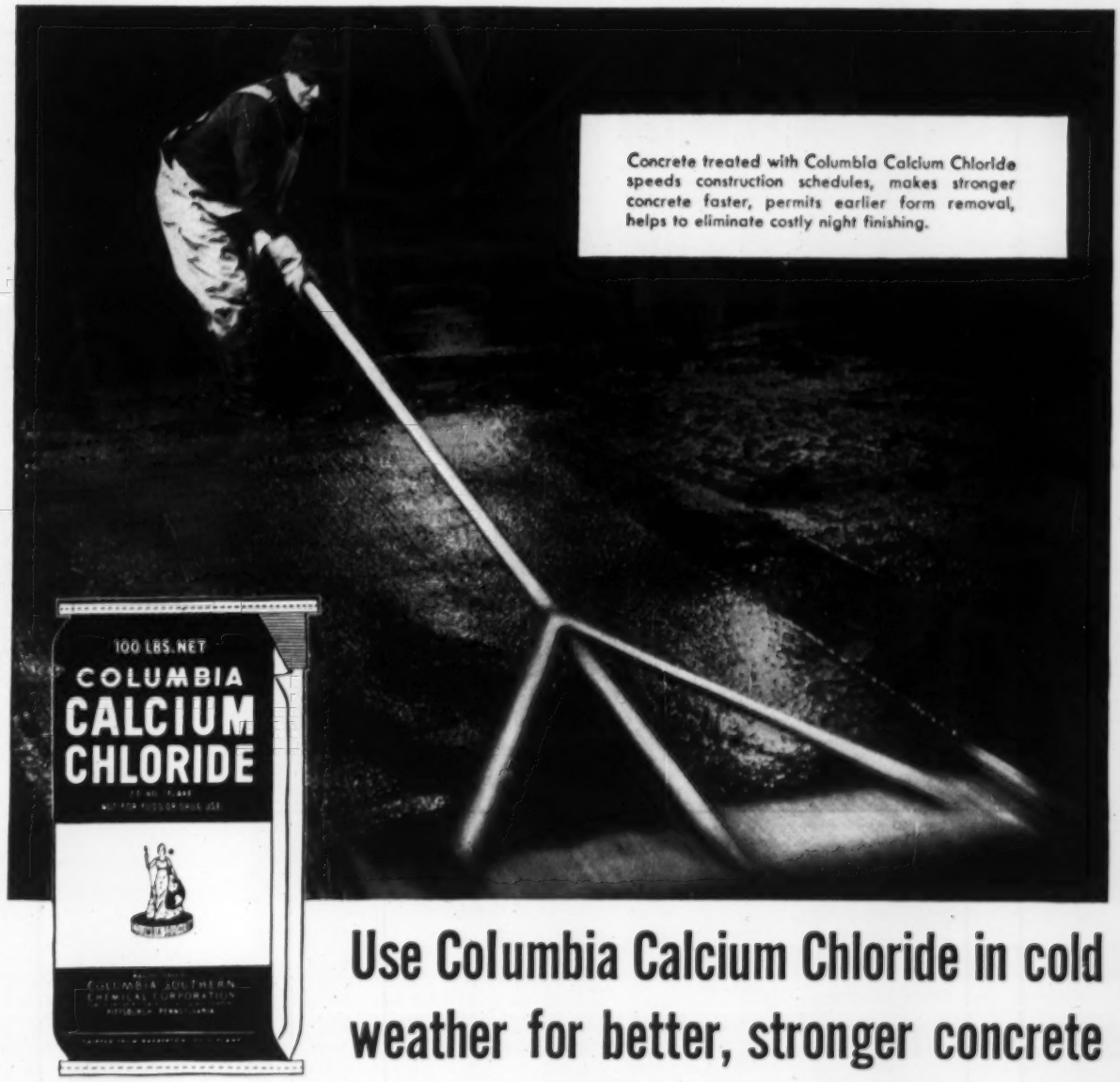
▲ **Pa., Johnstown**—HOUSING—Johnstown Housing Auth., Johnstown, plans by Joseph Triglia & Assoc., Ebensburg, 450 housing units. $4,500,000. CD 10/2/50.

▲ **Pa., McKeesport**—HOUSING—McKeesport City Housing Auth. plans by Celli Flynn, archt.-engr., 335 Shaw Ave., 300 housing units. $3,000,000.

▲ **Pa., Pittsburgh**—HOUSING—Pittsburgh Housing Auth., 200 Ross St., plans by Mitchell, Ritchey, Douden & Simonds, 430 Alcoa Bldg., Zone 19, North View Heights Housing Proj. PA-1-9, 999 units, 26 Ward, North Side, 89.5 acres, $14,000,000. CD 9/4; plans by Frey, Ringel, Grove, Schafer & Assoc., 615 W. Diamond St., Zone 12, Garfield Heights Housing Proj. PA-1-12, 532 units, 10 Ward, near East Liberty, 47.5 acres, $5,000,000. CD 8/27; plans by Curry, Martin & Taylor, 201 N. Craig St., Pittsburgh, Zone 13, Addison Terrace Addition Housing Proj. PA-1-13, 168 units, Fifth Ward, Hill District, 5.5 acres, $2,000,000. CD 8/27.

▲ **Tenn., Franklin**—HOUSING—Franklin Housing Auth., plans by Robert Macdonald, Harpeth Natl. Bank Bldg.,

(Continued on page 128)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(Continued from page 126)

and Donald Steinbaugh, Third Natl. Bank Bldg., Nashville, 78 housing units. $1,000,000.

▲ Tenn., Nashville—SCHOOLS—Bd. Educ., 700 Broadway, plans by Victor Stromquist, 1628 Church St., school, Wade St. $344,000; plans by Billis, Johnsen & McDonald, 57 Arcade St., addn. to Meigs School, an elementary and Junior High School, Ramsey St. $400,000; plans by James Wilson, Presbyterian Bldg., Wharton School, $600,000; constr. new city technical high school. $2,000,000.

Tex., Baytown—HOUSING—Housing Auth., O. C. Behymer, chmn., 309 N. Pruett St., plans by Matkin & Fitch, 4101 San Jacinto at Cleburne, Houston, 60 housing units, $540,360; 40 housing units, $360,000. CD 2/20.

Tex., Breckenridge—HOUSING—Breckenridge Housing Auth., Breckenridge, plans by Wyatt C. Hedrick, T & P Passenger Station Bldg., Fort Worth, 50 housing units. $500,000. CD 3/9/50.

Tex., Bryan—HOUSING—Housing Auth., Joe P. White, Jr. exec. dir., P. O. Box 605, plans by William Nash, City Natl. Bank Bldg., 110 housing units, $957,000. CD 1/13/53.

Tex., Hallsville—SCHOOL—Hallsville School Dist., Hallsville, plans by Kelly & Deteau, 1st. Natl. Bank Bldg., Longview, school constr. $500,000. CD 3/7.

▲ Tex., Harlingen—HOUSING—J. B. Housing Auth., 1201 E. Harrison, plans by Lyman Ellis, 201 Jackson St., 120 housing units, $1,135,200. CD 8/8/52.

▲ Tex., Laredo—HOUSING—Housing Auth., Ed S. Russell, chn., 1820 Houston St., plans by Olin Boese & Assoc., T & P Bldg., Ft. Worth, 200 housing units, $2,045,600. CD 5/7.

▲ Tex., Port Neches—SCHOOLS—Port Neches Independent School Dist., Port Neches, bond election Sept. 29, elementary school, $469,135; Junior High School at Groves, $1,250,000; Junior High School, $1,750,000; elementary school at Groves, $450,000; storage garage and warehouse, $95,000. CD 9/19.

▲ Tex., Waco—HOUSING—Waco Housing Auth., 3115 Austin Ave., plans by Wm. M. MacPherson, 114 Princess Pass, San Antonio; Proj. Tex. 10-4, 250 unit housing, $2,284,750; Tex. 10-5, 64 unit housing, $648,570; Tex. 10-6, 50 unit housing, $488,350; Tex. 10-7, 36 unit housing, $302,750.

▲ Tex., Orange—HOUSING—Housing Auth. of the City of Orange, P. O. Box 1787, plans by Matkin & Fitch, archts.-engrs., 4101 San Jacinto at Cleburne, Houston, Zone 4, 100 housing units. $1,319,031.

▲ Tex., Orange—LIBRARY, etc.—City, City Hall, library, auditorium and youth center, $1,250,000.

Tex., Wichita Falls—HOUSING—Wichita Falls Housing Auth., 501 Webster St., plans by Markrider, Clark & Jones, T & P Passenger Station, Fort Worth, 60 housing units. $584,880. Joe E. Ward, 1608 Monroe St., engr. CD 1/11/52.

▲ Va., Danville—HOUSING—Danville Redevelopment & Housing Auth., Danville, plans by William W. Patterson, 664 Main St., 224 unit housing, $1,000,000.

▲ Va., South Norfolk—HOUSING—South Norfolk Redevelopment & Housing Auth., 10 Admirals Rd., plans by A. Ray Pentecost, Jr., Colonial Ave. at 21st St., 100 masonry housing units. $1,800,000.

▲ Wash., Kennewick—SCHOOL—School Dist. 17, voted $500,000 bonds Sept. 11 Junior High School, $1,600,000. J. S. Villesvik, Liberty Bldg., Yakima, archt. CD 2/8.

▲ Wash., Mount Vernon—HOSPITAL—Hospital Dist. No. 1 plans by J. W. Maloney & Assocs., Central Bldg., Seattle, 78 bed hospital. $1,110,000. $120,000 bonds voted Sept. 11. CD 7/27.

▲ Wash., Tacoma—County—City WING—Pierce Co., Co. Courthouse, and City, City Hall, bond election Nov. 6 for law enforcement wing to county city bldg., $2,700,000. CD 8/21.

Wash., Ritzville—SCHOOL—School Dist. 160-67, Ritzville, intermediate grade school, $700,000.

▲ Wis., Milwaukee—SCHOOL—Bd. School Directors, 1111 No. 10 St., Zone 3, plans by Gassold, Johnson & Assocs., 734 N. Jefferson St., Zone 2, Junior High School, S. 39th St. and W. Ohio Ave. $2,500,000.

▲ Wis., Oshkosh—SCHOOL—Bd. Educ., Oshkosh, $3,500,000 bond election Nov. 6, high school. CD 12/13/55.

▲ Wis., Sheboygan—SCHOOLS—Bd. Educ., 837 Jefferson Ave., plans by Satre & Senescall, 707 Center Ave., elementary school, $660,875; plans by Bradley & Bradley, 924 N. Main St., Rockford, Ill., Junior High School, $1,500,000. CD 8/23; plans by Stubenrauch & Assocs., 712 Erie Ave., Senior High School, $3,000,000. CD 7/25.

COMMERCIAL BUILDINGS

▲ Ala., Montgomery—HOSPITAL—St. Margaret's Hospital, 834 Adams Ave., plans by Charles McCauley, Jackson Bldg., Birmingham, hospital addn. $1,500,000. CD 12/9/49.

▲ Ark., Little Rock—HOSPITAL—Missouri Pacific Hospital, 2320 Lincoln St., plans by Richard W. Groh, 807½ W. 3rd St., 4 floor hospital annex to be used primarily to house patients. $1,000,000. Completion set for Jan. 1958.

▲ Calif., Hayward—STORE—Branden Constr. Co., 3470 Tennyson Rd., plans by David T. Johnson, 3409 Grand Ave., Oakland, 2 story, 160,000 sq. ft. rein.-con. Kahn's Dpt. Store. $3,000,000. CD 5/4/54, under CA.

▲ Calif., Los Angeles—APARTMENT—Wagner Constr. Co., 1022 S. La Cienega Blvd., plans by Reigh & Maxwell, 1022 S. La Cienega Blvd., 124,000 sq. ft.

(Continued on page 130)

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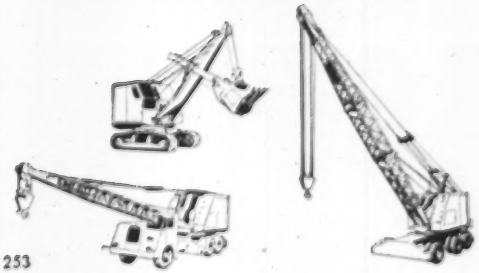


253

BAY CITY SHOVELS INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

(Continued from page 128)

apartment, 2 swimming pools, 7½ acres to be landscaped. $1,500,000.

Conn., Cheshire—CHURCH—St. Bridget's R. C. Church, Highland Ave., plans by Howard Sullivan, 1397 Chapel St., New Haven, church bldg. to seat 600, Parish Center, Main St. $500,000. CD 7/24.

▲ **Conn., Hartford**—HOSPITAL—Mount Sinai Hospital, 500 Blue Hills Ave., plans by Ebbets, Frid & Prentice, 862 Asylum Ave., 4th floor hospital addn. $2,500,000. Paul D. Bemis, 36 Pearl St., and A. John Macchi, 57 Farmington Ave., engrs. CD 5/25.

▲ **Conn., Shelton**—COUNTRY CLUB, etc.—Shelton Yacht & Cabana Club, Inc., River Rd., 300 boat marina and country club, Housatonic River, three-fourth acre swimming pool and skating rink. $1,000,000; pier, Housatonic River, off River Rd., $200,000.

▲ **Conn., West Hartford**—HOUSE DEVELOPMENT—Carter Constr. Co., 1125 New Britain Ave., plans by Hollis W. Kincaid, 81 Market Sq., Newington, 48 house development, Fuller Heights, Fuller Dr. $1,291,200.

▲ **D. C., Wash.**—DORMITORY—Trinity College, Michigan Ave. and Franklin St. N.E., plans by Gaudreau & Gaudreau, 330 N. Charles St., dormitory, incl. cafeteria and recreation rooms on present campus. $1,276,000.

▲ **Fla., Palm Beach**—MOTEL—J. Meyer Schine, Schine Hotels, Inc., 2201 Collins Ave., Miami Beach, 400-room motel, south of Phipps Park. $2,000,000.

Ill., Chicago—HOSPITAL—Belmont Community Hospital, 4058 Melrose St., plans by Roy W. Stott, 2915 W. 95th St., Evergreen Park, hospital addn. $500,000.

▲ **Kan., Halstead**—HOSPITAL—Sisters of St. Joseph Hospital, plans by Ash & Harrison, 307½ Laura St., Wichita, hospital addn. $1,000,000. CD 11/25.

Kan., Parsons—HOSPITAL—Sisters of St. Joseph, Parsons, plans by Ash & Harrison, 307½ Laura St., Wichita, Mercy Hospital. $500,000.

▲ **La., New Orleans**—SUPER MART—Grimball-van-Amerongen, owner and archt.) 403 Baronne St., 3 story, rein.-conc. Material Super Mart, $1,000,000.

▲ **Md., Hyattsville**—HOMES—Owner, c/o John D'Epagnier, archt., 1004 Riply St., Silver Spring, 155 homes known as Beacon Heights, West Hyattsville. $1,550,000.

Md., Takoma Park—DORMITORY, etc.—Washington Missionary College plans by Ronald Senseman, 327 Carroll Ave. N.W., Wash., D. C., dormitory and dining room. $500,000.

▲ **Mass., Fall River**—HOSPITAL—Union Hospital, 538 Prospect St., plans by Curtin & Riley, 45 Newbury St., Boston, 2 story, bsmnt. hospital addn., alterations, Prospect St. $1,425,000. CD 3/14/55.

▲ **Mich., Detroit**—SCHOOL—Detroit Lutheran High School Development, Dr. Henry Ulbrich, chn., 5040 Joy St., plans by Alfred Emmerling, 112 Madison St., Zone 26, high school, East Side, Kelly Rd. south of Eighth Mile Rd. $1,500,000. CD 3/29.

Mo., Joplin—HOSPITAL—St. John's Hospital, 2226 Jackson St., plans by Maguolo & Quick, 4908 Delmar St., St. Louis, and R. J. Braeckel, 1224 Broadway, Joplin, hospital addn. $800,000.

▲ **N. J., Asbury Park**—DWELLINGS, etc.—City of Asbury Park Redevelopment Auth., Asbury Park, Title I, plans by Isadore Candeub, 359 South Orange Ave., Newark, dwellings and business buildings on west side property between Springwood, Sylvan and West Cookman Aves. and Lincoln Pl. $5,000,000-$6,000,000.

N. J., Fair Lawn—CLASSROOMS, etc.—Jewish Center, 10-10 Norma Avenue, plans by Sidney Schenker, 52 Church St., Paterson, addn. to existing bldg., incl. classrooms, activity rooms, gymnasium, etc. $500,000.

▲ **N. J., New Brunswick**—HOUSING—New Brunswick Housing Auth., Somerset St., plans by Turano & Gadner, 35 W. 53 St., New York, N. Y., Title I housing, George St. New St., Memorial Parkway and Richmod St. $10,000,000-$12,000,000.

▲ **N. Y., Buffalo**—NURSING SCHOOL AND RESIDENCE—Deaconess Hospital, 536 Riley St., plans by Cannon, Thiele, Betz & Cannon, 2637 Main St., Niagara Falls, 5 story, 54,000 sq. ft. nursing school and residence bldg.; alterations, improvs. to present bldg., landscaping and parking lots on east and west sides of bldg., $2,750,000. Cresap, McCormick & Paget, 342 Madison Ave., New York, consult. engrs. CD 5/8.

N. Y., Elmira—DORMITORY—Elmira College, Elmira, plans by Haskell, Considine & Haskell, Hulett Bldg., dormitory, $665,000. CD 9/6.

▲ **N. Y., Rochester**—MOTEL, etc.—Wilmorite, Inc., Scottsville, 122 unit motel and 50 suite medical center. $1,500,000.

▲ **N. Y., Syracuse**—HOUSING—Syracuse University, Syracuse; housing facilities for married students. $6,000,000.

▲ **Ore., Portland**—CLUB—Multnomah Atlantic Club, 1849 S.W. Salmon St., plans by Church, Newberry & Roehr, Builders Exchange Bldg., club addn. $1,000,000.

▲ **Tenn., Nashville**—OFFICE BLDGS.—Baptist Sunday School Bd., 127 9th Ave. N., two office bldgs., between Broadway and Church St. $5,000,000. CD 12/23/46.

Tex., Beaumont—CHURCH—Saint Marks Episcopal Church, 680 Calder St., church-bldg. expansion, $500,000.

▲ **Tex., Ft. Worth**—SANCTUARY—Travis Ave. Baptist Church c/o Rev. R. E. Naylor, 3000 Travis Ave., plans by Preston M. Geren, 1607 Ft. Worth Natl. Bldg., sanctuary, 3200 seating capacity with chapel, air conditioned. $1,000,000.

▲ **Tex., Houston**—APARTMENT-HOTEL—Hermann Drive Assn., 1400 Hermann Dr., apartment-hotel, 1400 Blk., Hermann Dr., $2,000,000.

▲ **Tex., San Antonio**—BANK, OFFICE—Groos National Bank, 143 W. Commerce St., bank and office bldg., W. Commerce St. $2,750,000.

Vt., Derby—SCHOOL—Derby Academy, Main St., plans by Roland W. Whittier, 108 Shelburne St., Burlington, 33,000 sq. ft. high school, $500,000.

▲ **Wis., Waukesha**—HOSPITAL—Waukesha Memorial Hospital, 725 American Ave., plans by Eblin, Plunkett & Keymar, 1220 N. Milwaukee St., Milwaukee, 71 bed hospital addn. $1,500,000. CD 3/14.

▲ **Wis., West Allis**—OFFICE—Allis Chalmers Mfg. Co., 1126 S. 70 St., plans by Fritz von Grossmann, 5455 W. Burleigh, Milwaukee, 7 story, 60x100 ft., steel, brick office, $1,500,000. CD 6/26.

B. C., Nanaimo—STORE—T. Eaton Co. Ltd., plans by C. B. K. Van Norman, 540 Seymour, Vancouver, 2 story, rein.-con. department store to replace existing one here. $800,000.

▲ **Ont., Toronto**—COMMUNITY—Consolidated Building Corp., 89 Aveneur Rd., plans by Faludi & Simonson Associates, consult. engrs. and archts., 614 Church St., Toronto, Satellite Community, incl. 1,600 homes, 100-acre industrial area schools, shopping center, parking and swimming pool and 700 garden-type apartment units, 400-acre tract bounded by No. 401 Highway, McCowans' Rd. and Hydro right-of-way, $30,000,000.

▲ **Que., Alma**—HOUSING, etc.—M. Georges Remillard, c/o Richelieu Finance, rue des Cedres, Chicoutimi, housing, incl. community, church, commercial center, and industrial center, 24 acre site, near airport. $3,000,000.

Que., Montreal—OFFICE—Granger & Freres Ltd., 56 Notre Dame St. W., plans by Crevier, Lemieux & Mercier, 1065 Pratt Ave., Outremont, 1 and 2 story, bsmnt., 125x400 ft. brick walls, tar and gravel roof, office and warehouse concrete fdn. Cremazie Blvd. W. near Esplanade Ave. $600,000. Beaulieu, Trudeau, Dubuc, Lalancette & Beaulieu, 5810 Cote St. Luc Rd., consult. engrs.

INDUSTRIAL BUILDINGS

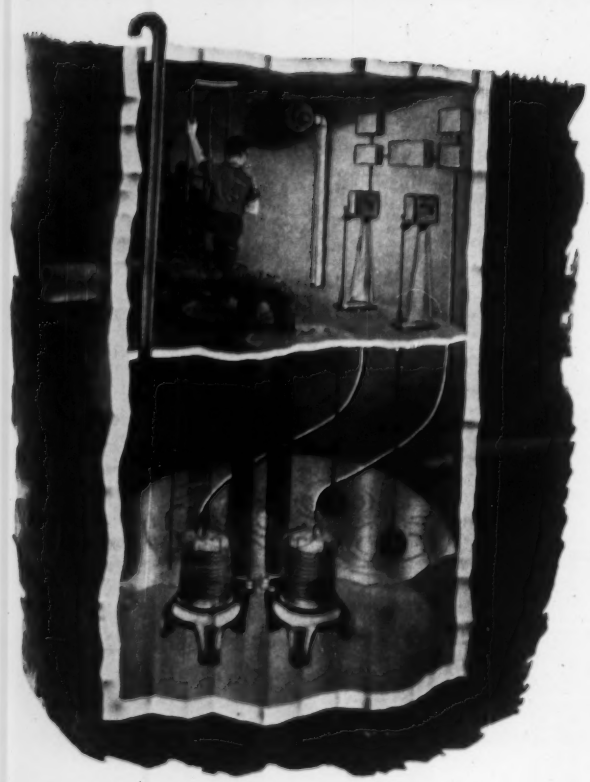
▲ **Ariz., Tempe**—POWER PLANT—Arizona Public Service Co., 501 S. 3 St., Phoenix, 220,000 kw. power plant, near here. $28,000,000. To go ahead 1957.

▲ **Conn., Stratford**—WAREHOUSE—Wm. B. Meyer, Inc., 745 Railroad Ave., Bridgeport, plans by Peter Petrofsky, 177 State St., Bridgeport, storage warehouse, 118,000 sq. ft., Great Meadows, railroad siding, $1,180,000.

▲ **Fla., Orlando**—MANUFACTURING PLANT—Glenn L. Martin Co., in charge of operations, Edward G. Uhl, vice-pres., Middle River, Baltimore, Md., manufactur-

(Continued on page 132)

The SUBMERSIBLE SEWAGE EJECTOR



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Capacities 35 to 2000 GPM with heads to 70 feet.
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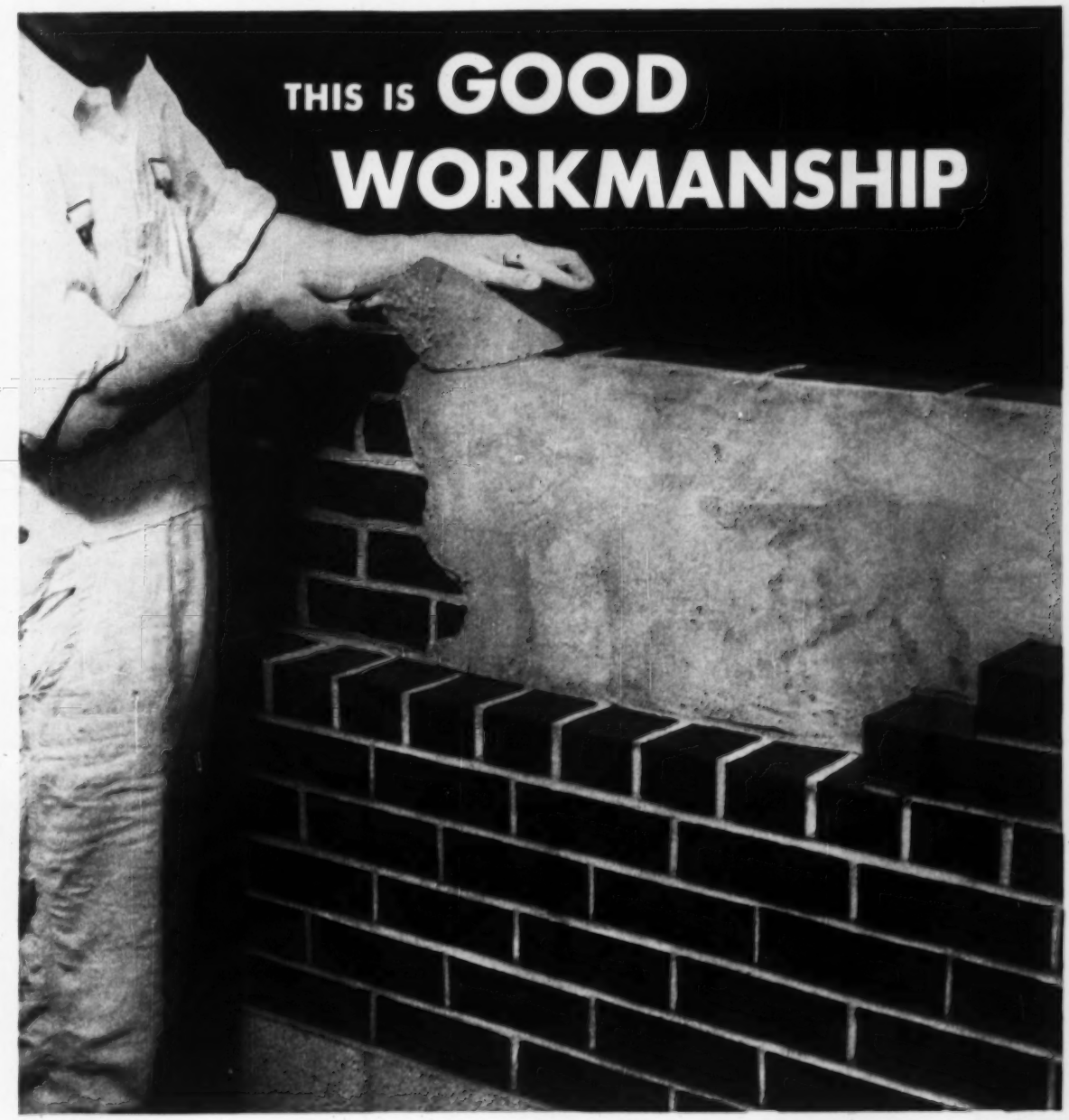

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Good workmanship includes wetting the brick—completely filling the head and bed joints—and back-plastering the face brick before the back-up units are laid.

Expect trouble when the face brick are not parged. Even if the space between the face brick and the back-up units is slushed, it cannot be completely filled with mortar. Voids are left between the mortar and the brick, through which water may enter, trickle down and leak to the inside of the wall.

Brixment mortar enables the bricklayer to back-plaster quickly and easily. Brixment mortar has great plasticity, high water-retaining capacity and bonding quality, great resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.

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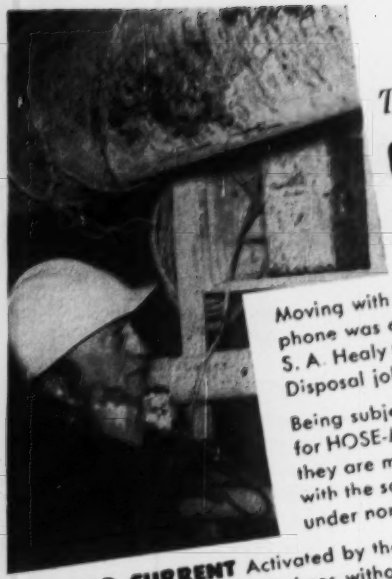

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(Continued from page 130)

ing plant, manufacturing electronics, nucleonics and missiles, piloted aircraft, 6,400 acres, 4½ mi. south of Orlando, U. S. Hy. No. 441. $21,100,000.

▲ Fla., West Palm Beach—PLANT—Pratt & Whitney Aircraft Div., United Aircraft Co., 1 Charter Oak Blvd., West Haven, Zone 1, Conn., plans by George H. Miehls & Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit 2, Mich., industrial plant west of here. $42,000,000. CD 9/10.

Ga., Lithonia—PLANT, etc.—Lithonia Lighting Products Co. plans by Mastin & Summer, 1401 Peachtree St., Atlanta, 109,000 sq. ft., brick, steel, rein.-conc. mfg. plant, 5,000 sq. ft. air conditioned, office. $750,000.

▲ La., Geismar—PLANT—Wyandotte Chemicals Corp., Alkali Square, Wyandotte, Mich., electrolytic chlorine-caustic soda plant, $20,000,000.

▲ Mass., Marlboro—Northboro—INDUSTRIAL DEVELOPMENT—James V. Flaherty, 30 Granite St., Norwood, industrial development Marlboro-Northboro Line, 900 acres owned, $1,000,000. To go ahead in Spring.

▲ Mass., Norwood—INDUSTRIAL DEVELOPMENT—James V. Flaherty, 30 Granite St., industrial development, Nahatan St., 15 acres owned. $1,500,000. To go ahead in April-May.

N. J., Jersey City—FACTORY—C. F. Mueller Co., 180 Baldwin Ave., plans by Harris K. Smith, 508 Summit Ave., 50x220 ft., steel, concrete aluminum factory, $500,000. Work in about 1 month.

N. J., Kearny—WAREHOUSE, etc.—Roadway Express, Inc., 1200 Adams St., Hoboken, 60,000 sq. ft. warehouse and office veneer blocks, brick, Central Ave. and 2nd Ave. $500,000. Louis T. Klauder & Assoc., Phila. Natl. Bank Bldg., Phila., Pa., consult. engrs.

▲ N. Y., Buffalo—AROMATICS RECOVERY UNIT—Frontier Oil Refining Co., Div. Ashland Oil & Refining Co., Ashland, Ky., 1,370 b/d aromatics recovery unit, $15,000,000.

▲ O., Fostoria—LABORATORY, etc.—National Carbon Co. Div. Union Carbide & Carbon Co., 30 E. 42 St., New York 17, N. Y., 2 story, 80x150 ft. brick laboratory-production bldg., and 20,000 sq. ft. aluminum constr. warehouse over $1,000,000.

O., Toledo—WAREHOUSE—Owner, c/o New York Central System, G. T. Donahue, Engr. Maint. & Ways, St. Clair Ave. and W. 3 St., Cleveland 13, warehouse and distribution center, near Angola Rd. and Reynolds Rd., Adams Twp. $500,000.

▲ Tex., Orange—PLANT—Firestone Tire & Rubber Co., Orange, abandoned 75,000 ton styrene mfg. plant. $10,000,000. CD 5/14.

Tex., Dallas—WAREHOUSE—Ray E. Skillern, 520 N. Pearl St., 100,000 sq. ft. masonry, fireproof, warehouse. $700,000.

Tex., Houston—PLANT—Armour & Co., Union Stock Yards, Chicago, Ill., 1st unit meat packing plant site in Roy Hugh Cullen's 650 acre tract for stockyards and processing plants. $750,000.

Tex., Houston—PLANT—Oscar Mayer & Co., 1241 N. Sedgwick St., Chicago, Ill., (1st unit) meat packing plant, site in Roy Hugh Cullens 650 acre tract for stockyards and processing plants. $500,000.

▲ Tex., Saginaw—GRAIN ELEVATORS—C & G Grain Co., National Bank of Topeka Bldg., Topeka, Kan. rein.-conc. grain elevators, Fort Worth and Denver R.R. $3,000,000.

▲ Tex., Sugarland—PLANT—Schlumberger Well Surveying Corp., 5000 Gulf Freeway, plant, Industrial Subdivision. $1,000,000.

▲ Wis., Madison—HALL—University of Wisconsin, plans by Grellinger & Rose, 757 N. Broadway, Milwaukee, addn. to Sterling Hall, $1,200,000. Roger C. Kirchhoff c/o owner, state archt. CD 12/21.

▲ Wis., Wauwatosa—WAREHOUSE—General Merchandise Co., 207 N. Milwaukee St., Milwaukee, plans by A. Epstein, 2011 W. Pershing St., Chicago, Ill., 1 story, 400,000 sq. ft. to 600,000 sq. ft. warehouse, $2,500,000. CD 11/29.

B. C., Vancouver—PLANT—MacMillan & Bloedel Ltd., 837 W. Hasting, plant for mfg. of grocery bags, using multi-purpose kraft paper on North arm Fraser River, $500,000.

▲ Man., Lynn Lake—MINING DEVELOPMENT—International Nickel Co. of Canada Ltd., 25 King St., Toronto, Ont., mining development and townsite for 15,000 persons in new copper nickel area of northern Manitoba. $150,000,000.

▲ Ont., Hamilton—FOUNDRY—Canada Iron Foundries Ltd., Stuart St. W., foundry to produce railway wheels. $5,000,000.

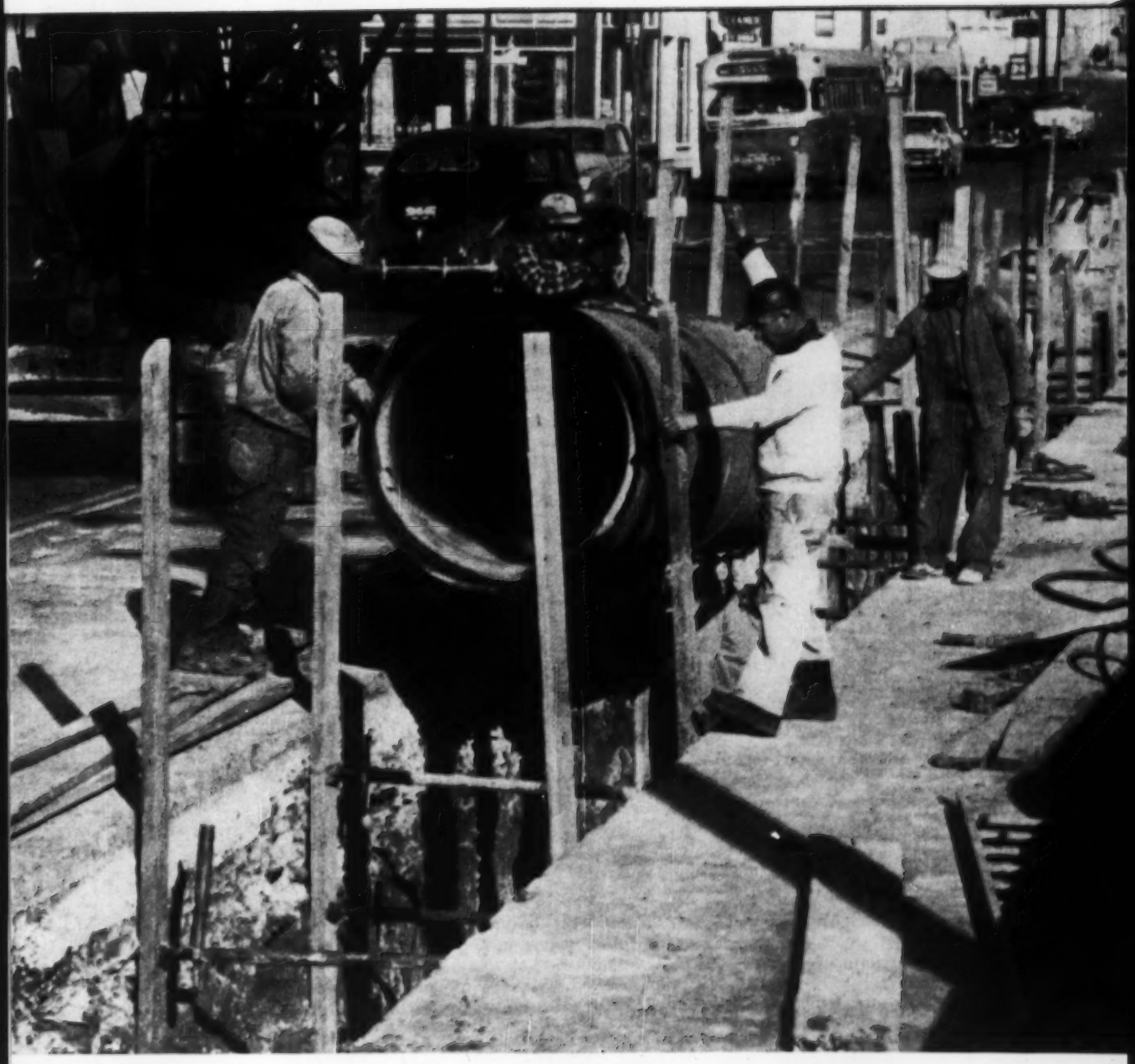
UNCLASSIFIED

▲ California—NATURAL GAS PIPE LINE—Pacific Lighting Gas Supply Co., 810 S. Flower St., Los Angeles, 30-in. natural gas pipe line from Southern part of San Joaquin Valley east of Bakersfield to Newhall, Est. over $10,000,000.

▲ Georgia—RURAL DISTRIBUTION LINES—Blue Ridge Electric Assn., Young Harris, 84 mi. rural distr. lines, 11 mi. 69 kv transmission line and sys. improv., Towns Co. $1,040,000. CD 1/13/54.

South Dakota—SUB-STATION—Dakotas Electric Cooperative, Bismarck, sub-station at Glenham and improv. $729,114. Ulteig Engr. Co., 1114½ Main St., Fargo, N. D., consult. engr.

▲ Wash., Tacoma—WATERWAYS—Port of Tacoma, Portacoma Rd., bond election Nov. 6, dredging and completion of Hylebos waterway, dredging of pioneer channel in Port Industrial waterway and development of facilities no Sitcum waterway, $5,400,000. CD 9/22/55.



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The line is 11,000 feet long and includes both 30 and 36-inch pipe. Along with 620 standard 16-foot lengths, the contractor installed 16 bends, 2 wyes, 3 reducers, 3 tees, 2 closure assemblies, one cross, and a number of short lengths and bevel adapters.

For information on any type of concrete pressure pipe for either water supply or pressure sewer lines, write *Price Brothers Company, Dayton, Ohio.*

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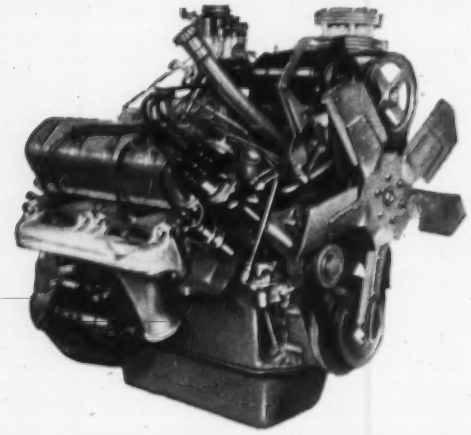

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STATE HIGHWAY LETTINGS

BRIDGES

October 8 Connecticut — October 10 Maine

STREETS AND ROADS

October 8 Connecticut — October 9, 11 Massachusetts

▲ **Conn., Hartford**—BA 10/15—Hartford Bridge Auth., 284 Sheldon St., (selected list of bidders) South Windsor Bridge across Connecticut River, Windsor, $8,000,000. Thomas Worcester, Inc., 85 State St., Hartford, engr. CD 7/17.

▲† **Mass., Falmouth**—STORAGE FACILITIES—BA 10/16—U. S. Eng., 150 Causeway St., Boston, constr. addnl. storage facilities, Otis Air Force Base, ENG-19-016-57-65. $1,500,000-$1,750,000. Plans deposit $25, refundable. CD 9/20.

BUILDINGS—BA

▲ **Mass., Danvers**—PLANT—BA 10/9—Sylvania Electric Products, Inc., C. A. Haines, dir. Facility Planning, 460 Market St., Williamsport, 294x450 ft. concrete plant. $1,500,000. Plans deposit $25. Paul H. VanWert, 699 Belmont Ave., Williamsport, Pa., archt. CD 5/9.

Conn., Avon—SCHOOL—BA 10/11—Town, School Bldg. Comn., Old Town Hall, high school, Route 167. $700,000. Plans deposit $30. Carl J. Malmfeldt & Assoc., 36 Pearl St., Hartford, archts. Paul D. Bemis, 36 Pearl St., Hartford, engr.

▲ **N. H., Hanover**—DORMITORIES—BA 10/15—Trustees of Dartmouth College, Hanover, 4 dormitories, 2 pairs of 3-story bldgs. $1,500,000. Campbell & Aldrich, 38 Newbury St., Boston, Mass., archts. CD 2/10.

▲ **Conn., Meriden**—SCHOOL—BA 10/19—Town, Bd. Educ., 22 Liberty St., West Side High School, Coe Ave., $2,600,000. Plans deposit $60. Willard Wilkins, 945 Asylum Ave., Hartford, archt. Robt. W. Loomis, 32 Maple Ave., Windsor, engr. CD 2/13.

HEAVY CONSTRUCTION—LB & CA

▲† **Consolidated Constructors, Inc.**, 807 Congress St., Portland, Me. LB $1,209,453. buildings air force station, ENG-19-016-57-55, TOPSHAM, ME.; U. S. Eng., 150 Causeway St., Boston, Mass. Bids Sept. 25. CD 9/11.

† **Procurement Office**, Portsmouth Air Force Base, Portsmouth, N. H., rejected bids Aug. 24, site preparation and utilities, Air Force Base, IFB 27-604-57-2, PORTSMOUTH, N. H., LB $880,489, Will re-advertise. (Correction—status). CD 9/6, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

J. F. Fitzgerald Constr. Co., 1000 Turnpike St., Canton, Mass. LB $1,799,973. highway exten. Rte. 128 Northern Circle Hy., FAP U 331-12 and U 346-1, Gloucester. Bids Sept. 25. CD 9/11.

▲† **Great Lakes Dredge & Dock Co.**, 17 Battery Place, New York, N. Y. CA $4,621,860, est. $4,279,500. imprvt. dredging President Rds., Boston Harbor, CIVENG-19-016-57-5, MASSACHUSETTS. U. S. Eng., 150 Causeway St., Boston, Mass. CD 9/11, under LB.

BUILDINGS—LB & CA

▲ **John W. Galbreath & Co., Inc.**, 150 E. 43 St., New York, N. Y. Owner Builds. $4,500,000 6 story, bsmt., 100,000 sq. ft. OFFICE, site former Brunswick Hotel, Boylston, and Clarendon Sts., BOSTON, MASS.

M. S. Kelliher Co., 294 Washington St., Boston, Mass. CA Approx. $700,000. DAIRY PLANT addn.; alterations, convert 1 units former Maverick Mills, into PLANT, EAST BOSTON, MASS.; Whiting Milk Co., 40 Cambridge St., Charlestown, Mass. CD 5/15.

▲ **United Engineers & Constructors, Inc.**, 1401 Arch St., Phila., Pa., CA Est. over $3,000,000 design and construct, 106-kw TURBO GENERATOR PLANT; CA $276,000. BOILER ROOM addn. at electric power plant, DEVON, CONN. Connecticut Light & Power Co., Selden St., Berlin, Conn. Awarded Sept. 13. CD 9/6.

▲ **Hayes Constr. Co.**, 1285 East St., New Britain, Conn., CA, $2,149,000 (3 bidders) Southwestern Junior High SCHOOL, Steele St., NEW BRITAIN, CONN. City Supt. Schools, 27 Hillside Pl., New Britain, Conn. Bids Sept. 21. CD 9/17.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 9 Maryland — October 16 New Jersey

STREETS AND ROADS

October 9 Maryland — October 18 New York

▲† **N. Y., Rome**—PAVING—BA On Or About 11/15—U. S. Eng., 111 E. 16 St., New York, Zone 3, r/w paving and apron at Griffiss Air Force Base. Over $5,000,000, Greenberg & Ames and William H. McFarland, 303 Fourth Ave., New York, Zone 10, engrs. CD 8/24.

BUILDINGS—BA

▲ **N. J., Fort Monmouth**—HOUSING—BA 10/25—U. S. Eng., 111 E. 16 St., New York 3, N. Y. construct and finance, 120-units of Capehart HOUSING, ENG-30-075-57-1, $1,500,000-$1,750,000. CD 9/27.

BUILDINGS—SLC

▲ **Pa., Irwin**—ATOMIC REACTOR CENTER—Westinghouse Electric Corp., Gateway Center, Pittsburgh, soon lets contract 3 story, brick, block atomic reactor center, near here. $6,500,000.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,

W. E. O'Neil Constr. Co., 412 Syracuse Kemper Bldg., Syracuse, N. Y., CA $2,408,286. 2.7 (2.11 acc.) mi. Syracuse-Bridgeport, Pt. 1, S.H. 672; Syracuse-Bridgeport, SH 672A; Syracuse-Bridgeport, Pt. 3, FARC 56-47, FASH 56-3, Onondaga Co. Bids Aug. 23, awarded Sept. 18. CD 8/29, under LB.

Stormont Constr. Co., Cornwall, Ont. LB (1) $249,459, (2) $390,430, (3) $541,464, (4) $335,616, (5) $74,084, (6) $713,452 combinations, (7) $799,616 combinations, (8) $844,384 combinations. reservoir clearing between Waddington and Barnhart Island Power Plant, St. Lawrence Co., Spec. No. PA-5-11023, St. Lawrence Contr. No. 31, NEW YORK. The Power Authority of the State of New York, 270 Broadway, New York, N. Y. Bids Sept. 25. CD 9/12.

Macasphalt Constr. Corp., 33-15 Lawrence St., Flushing, N. Y. LB $96,523 (3 bidders) No. 13, asph. repaving roadways of Ross St. from Wythe to Lee Aves. and Withers St. from Meeker Ave. to Humboldt St. (Brooklyn, N. Y.)

▲ **Vanbro Contg. Corp.**, Emery Court, Eltingville, Staten Island 12, N. Y. LB $1,987,000. (3 bidders) Seaside Blvd. imprvt. Contr. 1 grading, paving, curbs, sidewalks and utilities, Miller Field to Winfield St., Richmond Boro, NEW YORK. President Richmond Boro, Boro Hall, St. George, Staten Island 1, N. Y. Bids Sept. 19. CD 9/4.

▲ **W. J. Barney Corp.**, 101 Park Ave., New York 17, N. Y. CA $2,658,850. Contr. 120.002, transit shed, Pier 11, Atlantic Basin, BROOKLYN, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. CD 9/17, under LB.

▲ **Fehlhaber Constr. Co.**, 217 E. 49 St., New York 17, N. Y. CA $3,472,413. (2 bidders) demolition of Piers 35 and 36, dredging and constr. bulkhead and fill for proposed Pier 11 at Atlantic Basin, Contr. BP-12.001, BROOKLYN, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. CD 6/21, under LB.

▲ **McLean, Grove & George M. Brewster**, 275 Fort Lee Rd., Bogota, N. J. (joint venture) LB $11,771,580. (7 bidders) Contr. 455, constr. portion of West Delaware Tunnel of Delaware Sys., incl. approx. 26,000 lin. ft. tunnel; incl. Shaft 4, approx. 380 ft. deep, town of Colchester, Delaware Co. and town of Rockland, Sullivan Co., NEW YORK, N. Y. Bd. Water Supply, 120 Wall St., New York, N. Y. Bids Sept. 25. CD 8/30.

▲ **Slattery Contg. Corp.**, 46-36 54 Rd., Maspeth, N. Y. LB $4,748,389. (2 bidders) Manhattan Plaza imprvs., Brooklyn Bridge reconstr. of bridge approach alterations to subway structures in connection with the widening of Centre St. and Park Row and constr. of pedestrian underpass, ramps, street approaches, paving and landscaping, NEW YORK; N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Sept. 19. CD 8/10.

▲ **Westinghouse Electric Corp.**, 40 Wall St., New York 5, N. Y. CA $1,021,400. (2 bidders) furnishing, installing main power equip. for 59 Street Power Plant, New York City Transit System, Manhattan, Contr. No. P-162, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Aug. 3, awarded Aug. 23. CD 8/16, under LB.

▲ **Fischbach & Moore, Inc., Slattery Contg. Co., & J. Livingston & Co.**, 226 E. 41 St., New York 17, N. Y. (joint venture) LB $5,950,000. (4 bidders) furnish, install Manhattan and East River portions of 69 kv underground transmission sys., 59th St. sub-station to Third Ave. sub-station, Manhattan and Brooklyn, Contr. P-192, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Sept. 21. CD 8/24.

▲ **Rao Electrical Equipment Co., Inc., Arc Electrical Constr. Co., Inc., and Poirier & McLane Corp.**, 314 E. 39 St., New York 16, N. Y. (joint venture) LB $3,426,000. (5 bidders) furnish, install Brooklyn portion 69 kv underground transmission sys., 59th St. sub-station to Third Ave. sub-station, Manhattan and Brooklyn, Contr. P-192, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Sept. 21. CD 8/24.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

Villa Contr. Co., 233 North Ave., Westfield, N. J. CA $1,103,890, grading, paving, bridges 3.242 mi. US Rte. 206. Proj. F-100 (7), Burlington Co. Bids July 17, awarded Aug. 28. CD 7/24, under LB.

▲ **George M. Brewster & Sons**, 275 Ft. Lee Rd., Bogota, N. J., CA $4,998,450 general contract, Contract 355, Newark Bay Pumping Station sedimentation basin imprvs., sludge handling facilities, NEWARK, N. J. Passaic Valley Sewerage Comm., 24 Branford Pl., Newark, N. J. Bids Sept. 10. CD 8/8; **Ernest Jarvis & Co.**, 216 Chestnut St., Newark, N. J., CA $342,200, Contract 356, electrical contract (Newark, N. J.);

Lafayette Iron Works, 649 Grand St., Jersey City, N. J., CA $364,300. Contract 359, structural steel work (Newark, N. J.);

Globe Contg. Co., P. O. Box 4127, Alexandria, Va. LB $889,713 (10 bidders) Cabin John Branch Interceptor from Rockville Sewage Treatment Plant to Booze Creek, Contr. 1820-S, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. Bids Sept. 24. CD 9/13.

BUILDINGS—LB & CA

▲ **Gotham Constr. Corp.**, 501 Fifth Ave., New York 17, N. Y. CA Est. $1,250,000. 4 story RESEARCH LABORATORY and ADMINISTRATION BLDG. at site, BROOKLYN, N. Y. Jewish Chronic Disease Hospital, 86 E. 49 St., Brooklyn 3, N. Y. CD 12/27/55.

▲ **Mars Associates, Inc. & Normel Constr. Corp.**, 271 Church St., New York 13, N. Y. CA $1,063,000. (5 bidders) general constr. for rehabilitation and modernization of main bldg. and laboratory bldg. at Greenpoint HOSPITAL, Jackson St., Skillman, Debevois and Kingland Aves., BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. CD 7/12, under LB.

▲ **Terminal Constr. Co.**, State Hy. No. 17 and Moonarchie Ave., Wood-Ridge, N. J. CA $4,980,000. (3 bidders) general constr. 590-unit Ellicott Mall HOUSING, BUFFALO, N. Y. Buffalo Municipal Housing Auth., City Hall, Buffalo, N. Y. CD 9/7, under LB; **Henry M. Dechert, Inc.**, 181 Allen St., Buffalo, N. Y. CA, $618,200. plumbing work (Buffalo, N. Y.).

▲ **Fallwood Estates**, c/o Karl Bloch, archt., 7 Landsdowne Ave., Merrick, N. Y. Owner Builds. $1,300,000. 81 HOUSES on tract on Fallwood Parkway west of Main St., FARMINGDALE, N. Y.

Jack & Harry Match, c/o Samuel Paul, 89-51 164 St., Jamaica, N. Y. Owner Builds. $380,000. 20 HOUSES on tract at 75 St. and Ditmars Blvd., JACKSON HEIGHTS, N. Y.

W. Goldsmith, c/o Irving Margon, archt., 18 E. 41 St., New York 17, N. Y. Separate Contracts. $850,000. 6 story APARTMENT, Merrick Blvd. and 109 Ave., South Jamaica, JAMAICA, N. Y. CD 9/20/55.

▲ **John Rosenblum, Inc.**, 1860 Broadway, New York, 23, N. Y. CA, $1,556,000. (6 bidders) general constr., Public SCHOOL 8, E. 201 St. and Mosholu Parkway, Bronx Boro, NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, 1, N. Y. CD 8/29, under LB.

▲ **M. Melnick & Co., Inc.**, 225 Willow Ave., New York 54, N. Y. CA, $1,339,000. (5 bidders) general constr. modification addn. to JUNIOR HIGH SCHOOL 52, Academy St. and Broadway, Manhattan Boro, NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. CD 8/29, under LB.

Owner, c/o Albert Meklenburg Organization, Inc., 1038 Northern Blvd., Roslyn, N. Y. Owner Builds. $945,000. 45 HOUSES on tract at Christian Ave. and Quaker Path, STONEY BROOK, N. Y.

▲ **Frank Brisco Co.**, 287 S. 19 St., Newark, N. J., CA Est. $2,900,000. 4 story, 118,000 sq. ft. brick, steel, rein.-con. LABORATORY and WAREHOUSE, BERKELEY HEIGHTS, N. J. Bell Telephone Laboratories, 463 West St., New York, N. Y.; Lockwood Greene Engineers, Inc., 41 E. 42 St., New York, N. Y., engr. CD 5/4.

▲ **Lewis Epstein**, 51 Skytop Rd., Cedar Grove, N. J. Owner Builds. $1,215,000. HOMES, Fairview Ridge Estates, Skytop Rd., CEDAR GROVE, N. J. Rudolph L. Nowak, 89 Central Ave., Clifton, N. J., archt.

Glen View Manor, c/o James V. Virguna, archt., 272 State Highway No. 5, Palisade, N. J. Owner Builds, $800,000. 36 HOUSES on tract on Ell Rd., HILLSDALE, N. J.

▲ **B. & L. Construction Co.**, Wilson Ave., Middletown, N. J., Owner Builds, $3,200,000. 162 HOMES; New Monmouth Section, MIDDLETOWN, N. J. Erwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **Glen-Meade**, c/o Russell & Albert Edwards, Moorestown, N. J. Separate Contracts. $1,500,000. 114-unit RESIDENTIAL DEVELOPMENT, sewage treatment plant and sewers, Cinnaminson Twp., MOORESTOWN, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ **Alexander Caplan**, 407 Main St., Chatham, N. J. Owner Builds. $1,420,000. DWELLINGS, Normandy Heights and Woodruff Rd., MORRISTOWN, N. J. Walter Pheiffer, 322 Morris Ave., Elizabeth, N. J., and Wm. Chirgotis, 968 Stuyvesant Ave., Union, N. J., archts.

▲ **Modern Constr. Co.**, c/o Wm. G. Chirgotis, 968 Stuyvesant Ave., Union, N. J. Owner Builds. $1,175,000 split level HOUSES, Brookside Rd. to be known as "Indian Valley Estates" MORRISTOWN, N. J. Wm. G. Chirgotis, 968 Stuyvesant Ave., Union, N. J., archt.

▲ **Gibraltar Homes, Inc.**, Gerard Berman, Hamburg Turnpike, Preakness, N. J. Owner Builds, $2,500,000. final sections of HOMES in Gibraltar Park Estates, Wayne Twp., MOUNTAIN VIEW, N. J. Erwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **Carl S. Carlson**, P. O. Box 199, Ridgewood, N. J., Owner Builds, $1,300,000. 58 HOMES, Preakness

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Ave. "Valley Ridge Estates", Wayne Twp., MOUNTAIN VIEW, N. J. R. L. Novak, 89 Central Ave., Clifton, N. J., archt.

Arthur Anderson, 222-D Fallen Dr., New Milford, N. J., Owner Builds, $780,000. 30 HOUSES on Spring Valley Rd., Bear Brook Manor, PARK RIDGE, N. J.

Carmen Jannarone, 70 Ravine Ave., Nutley, N. J., Owner Builds, $800,000. RESIDENTIAL DEVELOPMENT, "Pompton Knolls," Jackson Road and Boulevard, Pequannock, POMPTON, N. J. Bernard Hersch, 507 Boulevard, East Paterson, N. J., archt.

Dominic Ruta, 433 Highland Ave., Palisades Park, N. J., Owner Builds, $800,000. 40 HOMES, Saddle River Ave. and Weariness Road "Rambling Brook Estates," RIDGEWOOD, N. J.

▲ **Albin Obal** c/o Kahn Agency, Inc., 517 Market St. Rochelle Park, N. J., Owner Builds, $2,500,000. 170 HOUSES on 35-acre tract near Market St., SADDLE BROOK, N. J.

▲ **Briar Park Homes**, c/o Fenick Vogel, archt., 309 Bloomfield Ave., Caldwell, N. J. Owner Builds, $1,725,000. 64 HOUSES on tract on Brian Rd. near Passaic Ave., WEST CALDWELL, N. J.

▲ **Weinstein Brothers**, c/o Fenick Vogel, archt., 309 Bloomfield Ave., West Caldwell, N. J., Owner Builds, $2,000,000. 64 HOMES in Briar Park, Briar Road off Passaic Ave., WEST CALDWELL, N. J.

Alyson Homes Corp., 282 Trenton Ave., Paterson, N. J., Owner Builds, $750,000. 30 HOMES, Lafayette and Washington Aves., WESTWOOD, N. J. Bernard Hersch, 507 Boulevard, East Paterson, N. J., archt.

▲ **Waterford Constr. Co.**, 5603 Spruce St., Phila., Pa. Separate Contracts. $2,680,000. RESIDENTIAL DEVELOPMENT, 134 units, Lawrence Rd., BROOMALL, PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **David Miller**, Vincentown, N. J. Separate Contracts $1,695,000. RESIDENTIAL DEVELOPMENT, Big Oak Rd., FALLSINGTON, PA.

▲ **H & L Builders**, 1530 York Rd., Abington, Pa. Separate Contracts. $1,280,000. RESIDENTIAL DEVELOPMENT, Edgehill Rd., HUNTINGDON VALLEY, PA.

▲ **S & M Building Corp.**, c/o Adolph Stein, Phoenixville, Pa. and **James D. Scully**, 6718 Broad St., Phila., Pa. Separate Contracts. $1,053,000. RESIDENTIAL DEVELOPMENT, 81 units, Garfield Rd., PHOENIXVILLE, PA.

▲ **Navarro Corp.**, 6219 Broad St., Pittsburgh, Pa. LB $2,566,000. 8 story, 150x165 ft., brick, block L-shaped HOSPITAL addn., alteration, PITTSBURGH, PA. St. Francis Hospital, 45 St., Pittsburgh, Pa. Bids Sept. 14. CD 8/28.

Stratford Development Co., c/o M. Segal, 6701 N. Broad St., Phila., Pa. Separate Contracts. $700,000. RESIDENTIAL DEVELOPMENT, 28 units, Washington Lane, RYDAL, PA. S. Sherman Rochlis, 1325 Walnut St., Phila., Pa., archt.

D. C. Govt., Dir. Bldgs. & Grounds, 499 Pa. Ave. N.W., Wash., D. C., rejected bids Aug. 24, Anacostia Senior HIGH SCHOOL addn., 16 and "R" Sts. S.E., WASH., D. C. LB $975,700. CD 9/4, under LB.

▲ **S. & S. Builders, Inc.**, 1337 Greenfield Rd., Oak Hill, Wilmington, Del. Separate Contracts, $1,250,000. 110 RESIDENCES, Ryan Ave., etc., WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 11 Florida

STREETS AND ROADS

October 11 Florida, Kentucky

HEAVY CONSTRUCTION—LB & CA

† **Reid & Hope**, Suffolk, Va., CA $706,111, supply facility and supply warehouse, Naval Air Station, NBy 631, Spec. 631/56. OCEANA, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. CD 8/3, under LB.

Williams-Austin Co., Grant Bldg., Pittsburgh, Pa., CA, $845,700. 17.7 mi. natural gas pipe line to Du Pont Bell Works from the Coco Compression Station, Kanawha Co., WEST VIRGINIA. United Fuel-Gas Co., 1033 Quarrier St., Charleston, W. Va. CD 5/3/54.

▲† **W. Harley Miller, Inc.**, 132 S. Queen St., Martinsburg, Wis., LB $1,376,845; Base Bid plus Alt. A, $1,375,645; Base Bid plus Alt. B, $1,407,681; Base Bid plus Alt. C, $1,403,629. Base Bid plus Alt. A plus Alt. B, $1,406,481. Base Bid plus Alt. A plus Alt. C, $1,402,429. buildings, fuel storage facilities, Air National Guard, Martinsburg Municipal Airport, ENG-46-022-57-4, MARTINSBURG, W. VA. U. S. Eng. 237 Fourth Ave., Huntington, W. Va. Bids Aug. 22. CD 7/27.

▲ **NORTH CAROLINA**—State Hy & P. Wks. Comn., Raleigh.

N. C.—**Nello L. Teer Co.**, Trust Bldg., Durham, N. C. LB $620,529, est. $400,000-$500,000, fine grading, CABC b. conc. binder and surf. 6.2 mi. US 70. Proj. No. 2153, F-168 (13), Craven Co.; LB $713,325, est. $400,000-$500,000, grading CABC bit. surf. tr. 6.95 mi. US 19-A and 23, Proj. No. 9515, F-70 (3), Jackson, Co.;

N. C.—**Wayne Engr. & Constr. Co.**, Box 306, Mount Olive, N. C., LB $355,278, est. $400,000-$500,000, grading, STBC, b. conc. binder and surf. 9.72 mi. US 421. Proj. 4375, F-609 (3), Harnett Co.;

N. C.—**A. R. Thompson Contr. Inc.**, Rutherfordton, N. C., LB $272,724, est. $300,000-$400,000, CABC, bit. surf. tr. 5.11 mi. US 221 (reloc.). Proj. 8504, SF-231 (7), McDowell Co.;

N. C.—**Dickerson, Inc.**, Monroe, N. C., LB $109,081, est. $100,000-$125,000 STBC bit. surf. tr. 3.75 mi. County Rd. Proj. No. 9-105 S-842 (1), Alexander Co.;

N. C.—**E. B. Towles Constr. Co.**, Box 1617, Wilmington, N. C., LB $107,679, est. $100,000-$125,000 b. conc. surf. course, Class I, 9.7 mi. US 17. Proj. B. S. 3-6-25-141, New Hanover Co. Bids Sept. 25. CD 9/14.

J. A. Jones Constr. Co., 354 Aero Dr., Shreveport, La. LB $679,700, est. $892,000, (10 bidders) Proposal No. 13486, North Pier and Tower at Moisant International Airport, Kenner, NEW ORLEANS, LA. City, 302 City Hall, New Orleans, La. Bids Sept. 20. CD 8/21.

BUILDINGS—LB & CA

▲ **Coit Sommers Co.**, Vidalia, Ga., CA, $1,093,700. Springfield Elementary SCHOOL (colored), Bostwick Elementary SCHOOL (colored), Rutledge Elementary SCHOOL (colored), Pearl High & Elementary SCHOOL (colored) Bostwick Elementary SCHOOL addns., mech. remodeling to Rutledge Elementary SCHOOL Madison Elementary SCHOOL, Morgan County High SCHOOL addn. and Buckhead Elementary SCHOOL addn., Morgan County MADISON, GA. State SCHOOL Bldg. Auth., 244 Washington St. S.W., Atlanta, Ga. Bids Sept. 18.

▲ **Ruscon Constr. Co.**, Box 837, 149 E. Bay St., Charleston, S. C., CA, $1,024,439. foundations for TEACHING HOSPITAL, University of Florida, GAINESVILLE, FLA. State Bd. Control, University of Florida, Gainesville, Fla. Awarded Aug. 30. CD 1/25, under LB.

▲ **S. S. Jacobs Co.**, Hildebrandt Bldg., Jacksonville, Fla., est. $1,000,000. DOCTORS OFFICE BLDG., Miami Rd. and Palm Ave., JACKSONVILLE, FLA. Mallin Developers, Inc., c/o Norman H. Freeman & Clements, archts., 1201 San Marco Blvd., Jacksonville, Fla. Tribble, Lee & Warren, Hildebrandt Bldg., Jacksonville, Fla., mech.-engrs., Mead & Smith, Hildebrandt Bldg., Jacksonville, Fla., struct. engrs.

▲ **Mackle Co., Inc.**, 2818 Coral Way, Miami, Fla., CA, $1,106,402, 144 RESIDENCES, S.W. 47 Terrace, Third Addn., MIAMI, FLA. Westwood Lake, Inc., 2818 Coral Way, Miami, Fla. James E. Vensel, 2820 Coral Way, Miami, Fla., archt.

▲ **Hargett Constr. Co.**, 113 Walton St., Lexington, Ky., LB $1,972,700. (5 bidders) Shawneetown Student APARTMENTS, 6 bldgs., 186 units, University of Kentucky, LEXINGTON, KY. State, Div. Purchases, Frankfort, Ky. Bids Sept. 25. CD 8/31.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 8 Connecticut October 10 Maine

STREETS AND ROADS

October 16, Ohio, Wisconsin

BUILDINGS—BA

▲ **Ill., Chicago**—SCHOOL—BA 10/16—Franciscan Sisters, 3150 N. Pulaski Rd., 2 story, Madonna High School, paving, southeastern corner Belmont and Karlow St. $2,000,000. C. I. Krajewski, 225 N. Michigan Ave., archt.

Ind., Rushville—GENERATING PLANT—BA 10/25—Utility Service Bd. of Rushville, Box 112, electric generating plant, new boilers and generating unit, $849,000. Bevington-Taggart & Fowler, 738 K of P Bldg., Indianapolis, consult. engrs.

HEAVY CONSTRUCTION—LB & CA

▲† **Mason Constr. Co., Inc.**, 2600 Far Hills St., Dayton, O., LB $7,892,512, est. $7,320,309 (7 bidders) nuclear engineering test facility, engineering test reactor bldg., light water moderate reactor capable of operation up to and incl. 10 thermal megwatts, guard house, water softening plant, site preparation, utilities, DAYTON, O. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids Sept. 25. CD 7/20.

Keno Constr. Co., 1800 Skokie Valley Rd., Highland Park, Ill., CA, $539,588, water reservoir and pumping station, PARK RIDGE, ILL. City, City Hall, Park Ridge, Ill. Bids Sept. 4. CD 9/13, under LB.

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,

Wis.—Murphy Constr. Co., Route 1, Black Creek, Wis., CA, $698,094. base, c. conc. 2.917 mi. Proj. T 0338 (2) and T 0338 (5), Outagamie Co.;

Wis.—McLean-Astleford Co., 7701 Harriet Ave. S., Minneapolis, Minn., CA, $189,235. grading, ballast, base 5.071 mi., Proj. T 0282 (2), St. Croix Co. Bids Sept. 18. CD 9/24.

MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing.
Denton Constr. Co., 20415 Mack Ave., Grosse Pointe, Mich. CA **$948,411**, est. $1,300,000. (8 bidders) c. conc. 5.398 mi. Fort St. extension and Toledo Expressway from intersection of Fort Allegen and Gibraltar Rds. to intersection of Sibley and Fort Rds., M 82211 C2-U (SP 82-191), M 82211 C3-R (SP 82-191), Wayne Co. Bids Sept. 19. CD 9/13.

BUILDINGS—LB & CA

▲ **Duffy Constr. Co.**, 50 Public Square, Cleveland, O. CA Est. **$2,000,000**. general constr. LAMP GLASS ADMINISTRATION and ENGINEERING BLDG., RICHMOND HEIGHTS, O. General Electric Co., 202 State St., Schenectady, N. Y. Bids Aug. 31. CD 8/14.

▲ **George A. Rutherford Co. Inc.**, 2725 Prospect Ave., Cleveland, O. CA general constr. QUARTZ MANUFACTURING BLDG., WILLOUGHBY, O. Est. **$1,000,000-$1,500,000**. General Electric Co., 202 State St., Schenectady 5, N. Y. Bids Aug. 28. CD 8/14;
Grant Electric Co., Inc., 3016 Payne Ave., Cleveland, O. CA electrical work (Willoughby, O.);
Spohn Heating & Ventilating Co. Inc., 1775 E. 45 St., Cleveland, O., CA, mechanical (Willoughby, O.).

Sumner Sollitt Co., 307 N. Michigan Ave., Chicago, Ill., CA, Est. **$800,000** design and construct 2 story, bsmnt., 52x78 ft. LABORATORY, 40x120 ft. OFFICES, 1 story, bsmnt., 60x202 ft. PROCESSING BLDG., HAMMOND, IND. Standard Oil of Indiana, 2400 New York Ave., Hammond, Ind. CD 5/31.

▲ **Hagerman Constr. Co.**, 403 Strauss Bldg., Fort Wayne, Ind., LB **$1,000,000**. 1 and 6 story, part bsmnt. STUDENT CHAPEL, VALPARAISO, IND. University of Valparaiso, Valparaiso, Ind. Bids Sept. 17. CD 8/30.

▲ **Klefstad Eng. Co.**, 4444 W. Montrose St., Chicago, Ill., Owner Builds, **$1,800,000**. design and construct 1 story, 165,000 sq. ft., brick, steel PLANT with 2 story air-conditioned OFFICE section, 8220 Austin Ave., MORTON GROVE, ILL. Radiant Mfg. Co., lessee.

B. W. Handler Constr. Co., 223 W. Jackson Blvd., Chicago, Ill., CA, **$900,000**. 1 story OFFICE, NILES, ILL. Greyhound Motors & Supply Co., 5700 Jarvis Ave., Niles, Ill. CD 6/12.

Fullerton Constr. Co., 14156 Filer St., Detroit, Mich. CA Est. **$800,000**. JUNIOR HIGH SCHOOL, CLINTON, MICH. Bd. Educ., Clinton Valley Schools, Thomas G. Lightbody, secy., Clinton, Mich. Bids Sept. 5. CD 8/16.

O. W. Burke Co., 1032 Fisher Bldg., Detroit, Mich. CA **$624,345**. general constr. HOSPITAL addn., East Jefferson Ave., DETROIT, MICH. Deaconess Hospital, 3245 E. Jefferson Ave., Detroit 7, Mich. CD 9/6, under LB.

▲† **Birchard & Roberts**, 23931 Kean Ave., Dearborn 7, Mich. CA **$1,175,000**. SCHOOL addns., incl. Lathers Street School, Burger Junior High School, South Junior High School No. 2, Burger Junior High School No. 2, South Junior High School No. 1, GARDEN CITY, MICH. City Pub. Schools, William Fischer, secy., Bd. Educ., 29128 Dover St., Garden City, Mich. Bids Aug. 28. CD 8/6, and 8/10.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 18 Texas
STREETS AND ROADS
October 11 Kansas October 17, 18 Texas

BUILDINGS—BA

▲ **Okla., Oklahoma City**—HIGH SCHOOL—BA 10/11—Bd. Educ., 900 N. Klein St., John Marshall High School addn. $1,000,000. Hudgins, Thompson & Ball, 1411 Classen St., archts. CD 3/30.

Minn., St. Paul—RESIDENCE HALLS—BA 10/18—Regents of Univ. of Minn., C. A. Smith, purch. agt., 404 Admin. Bldg., Minneapolis Campus, married students' residence halls, 100 apartments, on St. Paul Campus, $785,000. Plans deposit $25. Magney, Tusler & Setter, 303 Roanoke St., Minneapolis, archts. CD 10/12.

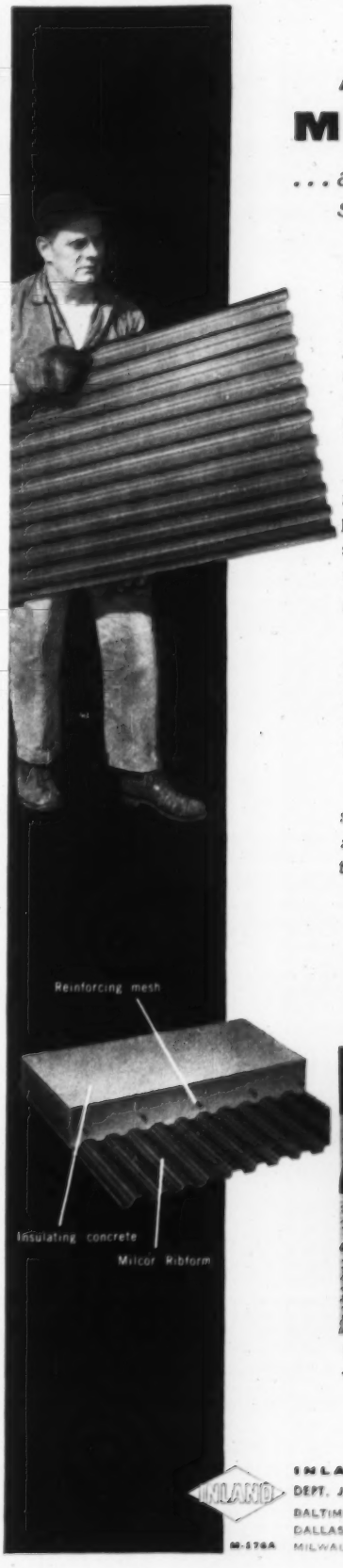
Minn., Kasson—SCHOOL—BA 10/24—Bd. Educ. Joint Indpt. Consolidated School Dist. No. 90, Dodge and Olmsted Counties, C. E. Palmer, clk., 1 story U shaped high school between Kasson and Mantorville, $800,000. Plans deposit $30. Swanson, Matson & Wegleitner, 500 Sexton Bldg., Minneapolis, archts. CD 4/16.

Wyo., Cody—AUDITORIUM—BA 10/25—School Dist. No. 6, 1 story, 150x240 ft. brick bldg. for auditorium and gymnasium $750,000. Tresler & McCall, 1276 Sheridan St., engrs.-archts. CD 6/29/55.

HEAVY CONSTRUCTION—LB & CA

S. R. Brunn Constr. Co., 206 Rainbow St., Kansas City, Mo. LB **$619,000**. 2 hangars on west side Municipal Air Terminal, KANSAS CITY, MO. City, City Hall, Kansas City, Mo. Bids Sept. 21. CD 9/6/54.

▲† **Stupp Brothers Bridge & Iron Co.**, 3800 Weber Rd., St. Louis, Mo. LB **$1,297,809**, est. $1,166,567. superstructure for Long Creek Bridge connected with relocation of Hy. 87 around Table Rock Dam, Branson, Mo., MISSOURI and ARKANSAS. U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids Sept. 19. CD 8/27.



Announcing
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...a new, stronger form for short-span concrete slabs

Milcor Ribform is a new, permanent, high-strength steel form for concrete floor-and-roof-slabs poured over steel joists or beams. It is quickly laid in sheets and welded to the steel supports where it becomes a rigid, non-porous base for the concrete.

This newest addition to Milcor's growing family of quality building products is fabricated from a high-tensile steel and has a unique ribbed shape that is stronger than ordinary corrugated patterns.

Being a rigid type of centering, Ribform never need be stretched during installation. It cannot twist or deform the joists. No expensive temporary bracing is required.

Ribform can be used to form concrete slabs over pipe trenches or other inaccessible locations where it is impractical and expensive to "strip" wood forms.

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Ribform is easy to handle. Just weld it to the joists —the rigid sheets need no supplementary bracing.

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DEPT. J, 4147 W. BURNHAM ST. • MILWAUKEE 1, WISCONSIN
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DALLAS • DENVER • DETROIT • KANSAS CITY • LOS ANGELES
MILWAUKEE • MINNEAPOLIS • NEW YORK • ST. LOUIS

M-176A

† **Wm. G. Cook Constr. Co.**, Box 8466, Jackson, Miss. CA $860,120, est. $927,665. constr. Missouri River Agricultural Levee Unit 497-L located along left bank of Missouri River, near Forest City, Holt Co., Eng. 57-9, MISSOURI. U. S. Eng., Federal Office Bldg., Kansas City, Mo. Bids Sept. 18, awarded Sept. 19. CD 9/25, under LB.

† **McCormick-Erling Co.**, 633 1st Ave. N., Fargo, N. D. LB $849,623, Schedule 1; LB $826,678, Schedule 1a, (5 bidders) airfield paving (ANG), Hector Field, Inv. 25-066-57-16, FARGO, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Sept. 21. CD 9/7.

▲ **TEXAS**—State Hy. Dpt., Austin,
Killian-House Co., 4600 Broadway, San Antonio, Tex. CA $1,096,093. grading, paving 3.249 mi. Hy. Loop 13, Proj. F 1075 (6), Bexar Co. Bids Sept. 11. CD 9/24, under LB.

Markham & Brown and McCullum & Larson, 1961 N. Industrial Blvd., Dallas, Tex. CA $893,210. dam and spillway, relocation farm to market road 197), CARTHAGE, TEX. Panola Co. Fresh Water Dist. 1, c/o W. C. Smith, Carthage, Tex. Bids Sept. 6. CD 9/14, under LB.

† **Commercial Contracting Co.**, Port Lavaca, Tex. CA $760,000. radar unit, Matagorda Bay area, PALACIOS, TEX. Dpt. Air Force, The Pentagon, Wash. 25, D. C. CD 12/14/55.

BUILDINGS—LB & CA

G. I. Johnson & Son Co., 848 W. 79 St., Minneapolis, Minn. LB $988,400. (8 bidders) general constr. first unit, ADMINISTRATION-HOSPITAL BLDG., BRAINERD, MINN. State Dpt. Admin., 19 State Capitol, St. Paul, Minn. Bids Sept. 21. CD 8/29.

▲ **Standard Constr. Co.**, 250 Builders Exchange Bldg., Minneapolis, Minn. LB $1,721,400. (6 bidders) general constr. two BUILDING addns. at Cambridge State School and Hospital, CAMBRIDGE, MINN. State, Dpt. Admin., 19 State Capitol, St. Paul, Minn. Bids Sept. 19. (Correction-location of project). CD 9/24, under Mass., Cambridge.

▲ **Joseph H. Vatterott, Inc.**, 1500 S. Florissant Rd., Florissant, Mo. Owner Builds. $1,250,000. 123 addnl. brick, concrete RESIDENCES, in Grenoble Subdivision off Derhake Rd., adjacent to Washington Ave., FLORISSANT, MO.

Gast Building & Realty Co., 7930 Croydon St., St. Louis 14, Mo. Owner Builds. $700,000. 35 addnl. RESIDENCES in Briarwood subdivision adjacent to Daniel Boone Parkway off Warson Rd., LADUE (ST. LOUIS 24 P.O.), MO.

▲ **L. J. Wenneker Constr. Co.**, 8400 Clayton Rd., Ladue 24, Mo. CA Est. $1,250,000. 97 RESIDENCES, Tanglewood Subdivision off 8400 Clayton Rd. and 8800 Ladue Rd., LADUE (ST. LOUIS 24 P. O.), Mo. Burt Wenneker, 1 Ladue Forest, Ladue 24, Mo.

▲ **Vescovo Building & Realty Co.**, 9620 Gravois Rd., Affton 23, Mo. Owner Builds. $1,800,000. 240 one story, bsmnt. RESIDENCES in Maple Hills subdivision on Green Park Rd. south of Union Rd., LEMAY (ST. LOUIS 23 P. O.), MO.

▲ **Glick-Kaiser, Inc.**, 9617 Olive Street Rd., St. Louis 24, Mo. Owner Builds. $1,750,000. 175, full bsmnt. RESIDENCES in 197 acre Indian Meadows Subdivision 9500 Olive Street Rd., OLIVETTE (ST. LOUIS 14 P. O.), MO.

▲ **B & S Constr. Co.**, 4 Watson Court, St. Louis 24, Mo., Owner Builds. $1,200,000. 44 RESIDENCES of Williamsburg type on Conway Rd., ST. LOUIS COUNTY, MO.

▲ **Michael Macken & Co.**, 8614 Watson Rd., St. Louis County 23, Mo. Owner Builds. $1,000,000. 20 or more RESIDENCES in Bridle Trail Meadows subdivision ½ mi. west of Lindbergh Blvd. off Gravois Rd., ST. LOUIS COUNTY, MO.

▲ **Parkchester Development Co.**, Sulphur Springs Rd. south of Manchester Rd., St. Louis County, Mo. Owner Builds. $1,850,000. 185 RESIDENCES, Winston Park subdivision, ST. LOUIS COUNTY, MO.

▲ **Riegel Development Co.**, Bellefontaine Rd. and Trampe Lane, St. Louis County 15, Mo. Owner Builds. $1,500,000. 170 RESIDENCES in Broadlawns subdivision off Trampe lane adjacent to Criterion Ave., ST. LOUIS COUNTY, MO.

Suburban Building Co., 441 Dickens St., Kirkwood 22, Mo. CA Est. $900,000. 80 addnl. RESIDENCES in Sturdy Estates subdivision off Sturdy Dr. and Maebern Terrace south of U. S. No. 66, ST. LOUIS COUNTY, MO. Preferred Homes, Inc., Ed. R. Linn, pres., 1405 Robin Hood Court, Kirkwood 22, Mo.

L. J. McNeary Realty & Constr. Co., 9715 Gravois Rd., Affton 23, Mo. Owner Builds. $950,000. 106 brick, RESIDENCES in Sappington Acres Estates No. 2, SAPPINGTON (ST. LOUIS 23 P. O.), MO.

▲ **Michael Macken & Co.**, 8614 Watson Rd., St. Louis 23, Mo. Owner Builds. $2,250,000. 100 RESIDENCES in Webster Gardens south of U. S. 66 and west of Elm Ave., WEBSTER GROVES (ST. LOUIS 19 P. O.), MO.

▲ **Assenmacher Constr. Co.**, 627 N. 17 St., Lincoln, Neb. CA $2,000,000. general constr. incl. mechanical and electrical home OFFICE, Cotner Blvd. and O Sts., LINCOLN, NEB. Bankers Life Insurance Co. of Nebraska, 1345 "N" St., Lincoln, Neb. Bids Sept. 7. CD 8/15.

Henger Constr. Co., 1600 Simmons Bldg., Dallas, Tex. CA $682,600. HOSPITAL expansion DALLAS, TEX. Parkland Memorial Hospital, 5201 Harry Hines Blvd., Dallas, Tex. CD 9/26, under LB.

Thad Dederick Constr. Co., Box 13067, Houston, Tex. LB $664,000. M.D. Anderson HOSPITAL and Tumor CLINIC alterations and expansion in Medical Center, HOUSTON, TEX. University of Texas, Bd. Regents, Austin, Tex. MacKie & Kamrath, 2713 Ferndale St., Houston, Tex. archts. Walter P. Moore, 2 Pinedale St., and R. L. Jenkins, 2622 Richmond St., Houston, Tex. engrs. Bids Sept. 18. CD 8/28.

Herman Weber, Inc., 800 N. Pearl St., Beaumont, Tex. LB $516,000. Southside Elementary SCHOOL; LB $438,995, Westside and Northside Elementary SCHOOLS, SILSBEE, TEX. Silsbee Independent School Dist., Silsbee, Tex. Bids Sept. 13. CD 9/5.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Washington**—BA 11/28—U. S. Eng., City-County Airport, Walla Walla; south shore constr., Ice Harbor Lock & Dam, Walla Walla and Franklin Counties, CIVENG-45-164-57-16. Plans deposit $200.

BUILDINGS—BA

Calif., Sacramento—SCHOOL—BA 10/15—Sacramento City Unified School Dist. c/o supt. 16th and N Sts., Joaquin Miller Junior High School addn. $800,000. Plans deposit $25. Baravetto & Thomas, 718 Alhambra Blvd., archts. CD 7/14/55.

HEAVY CONSTRUCTION—LB & CA

ARIZONA—State Hy. Dpt., 1739 W. Jackson St., Phoenix, **Isbell Constr. Co.**, 2808 N. 27 Ave., Phoenix, Ariz., CA, $741,571, base, bit. paving 5.8 mi. divided hy., State Route 86-Benson-Steins Pass Hy., Cochise Co. Bids Aug. 30. CD 9/5, under LB.

† **Transocean Eng. Corp.**, 7807 Russell City Rd., Hayward, Calif., CA $869,631, Schedules 1 and 2 county road relocation for Trinity dam, access road for Lewiston Spring Creek tunnel, and piers, abutments and approach for Trinity River bridge, Central Valley Proj., Trinity River Div., Spec. DC 4737. CALIFORNIA. Bureau Reclamation, Dpt. Interior, Weaverville, Calif. Bids Aug. 30. CD 9/6, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif., CA, $1,847,302. grading, paving 6.8 mi. 4-lane divided highway, underpass and bridge, existing underpass alteration between Mossdale and Richards Ave. on U.S. 50 and Sign Rte. 120, San Joaquin Co. Bids Sept. 5, awarded Sept. 20. CD 9/10.

† **San Francisco Bridge Co.**, 140 Montgomery St., San Francisco, Calif., CA, $740,229 dredging in Richmond Harbor, Richmond, Contra Costa Co., CIVENG-57-1, CALIFORNIA. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. CD 8/22, under LB.

▲ **Guy F. Atkinson Co.**, Box 459, Long Beach, Calif., LB $8,176,489 (6 bidders) constr. Ninth St. Bridge over Los Angeles Flood Control Channel, LONG BEACH, CALIF. Long Beach Bd. Harbor Comrs., 1333 El Embarcadero, Los Angeles, Calif. Moffatt & Nichols, 122 W. 5 St., Long Beach, Calif., engrs. Bids Sept. 11.

BUILDINGS—LB & CA

▲ **Hilp & Rhodes**, 299 Kansas St., San Francisco, Calif. CA, Est. $20,000,000. 650,000 sq. ft. rein.-con. SHOPPING CENTER, 68-stores, 6,000 car parking facility, 54-acre site, OGDEN, UTAH, Hilp & Rhodes Realty Corp., 299 Kansas St., San Francisco, Calif. CD 9/17.

North Kitsap School Dist. 400, Poulsbo, Wash. rejected bids Aug. 22; HIGH SCHOOL, POULSBO, WASH. LB $977,821. Will re-advertise. CD 8/30, under LB.

▲ **H. Halvorson, Inc.**, Ziegler Bldg., Spokane, Wash., CA $935,924. general contract two 5 story RESIDENCE HALLS for Women, PULLMAN, WASH. Washington State College, Pullman, Wash. Bids Aug. 31, awarded Sept. 22. CD 9/7, under LB;
J. G. Watts Constr. Co., Salem, Ore., CA $525,440. general contract 9 frame, 2 story each married student's HOUSING buildings, (Pullman, Wash.).

Cawdrey & Vemo, 1601 Fremont Ave., Seattle 3, Wash., CA $719,510 (5 bidders) general contract 5 story, 60,000 sq. ft., rein.-con. CLASSROOM BLDG., SEATTLE, WASH. Seattle University, Broadway and E. Madison St., Seattle, Wash. Bids Sept. 21. CD 9/18.

Crown Constr. Co., 5059 W. Pico Blvd., Los Angeles, Calif., LB $944,514 (4 bidders) second increment at Azusa HIGH SCHOOL, AZUSA, CALIF. Citrus Union High School Dist., 18824 E. Foothill Blvd., Azusa, Calif. Bids Aug. 31. CD 8/7.

▲ **R. J. Daum Constr. Co.**, 12537 S. Cerise Ave., Hawthorne, Calif., CA $1,049,566. new SCHOOL and Hoffman and Rockwood SCHOOLS addns., CALEXICO, CALIF. Calexico School Dist., 7 and Herber St., Calexico, Calif. CD 8/21, under LB.

▲ **Robert E. McKee General Contractors, Inc.**, 4701 San Fernando Rd. West, Los Angeles, Calif., CA, $2,530,000. general contract HOSPITAL ADMINISTRATION and ACUTE INFIRM WARDS, Fairview State Hospital, COSTA MESA, CALIF. State Div. Architecture, 1120 N St., Sacramento, Calif. CD 4/24.

Howard J. White, Inc., 870 Charlestone Rd., Palo Alto, Calif., LB $749,037. (8 bidders) 2 Elementary SCHOOLS, Eisenhower Elementary SCHOOL, Garden Gate Elementary SCHOOL, frame, stucco constr. CUPERTINO, CALIF. Cupertino Union Elementary School Dist., c/o supt., P. O. Box 155, Cupertino, Calif. Bids Sept. 18. CD 8/30.

Carl O. Larsen, 1246 S. Main St., Santa Ana, Calif., LB $712,160. (10 bidders) Proj. 20, 45,000 sq. ft., INTERMEDIATE SCHOOL, GARDEN GROVE, CALIF. Garden Grove School Dist., Garden Grove, Calif. Bids Sept. 21.

Haas, Haynie & Frandsen, 8913 Olympia Blvd., Beverly Hills, Calif., CA, $751,000. 130,000 sq. ft. coffee processing and packaging PLANT, LENNOX, CALIF. J. A. Folger Co., 101 Howard St., San Francisco, Calif. Quinton Engineers Ltd., 812 W. 8 St., Los Angeles, Calif., engrs.

▲ **MacDonald Young & Nelson**, 600 California St., San Francisco, Calif., CA Est. $1,500,000. (10 Bidders) GROCERY WAREHOUSE and TRUCK REPAIR SHOP, RICHMOND, CALIF. Safeway Stores, Inc., 366 Grand Ave., Oakland, Calif. Bids Sept. 18. CD 8/29.

Wm. Simpson Constr. Co., 2401 W. Beverly Blvd., Los Angeles, Calif., CA $800,000. 2 story 96x230 ft. concrete PLANT OFFICE, 1700 Main St., SANTA MONICA, CALIF. Rand Corp., 1700 Main St., Santa Monica, Calif.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
October 10 Ontario

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria,
Highway Constr. Co. Ltd., 836 River Rd., Lulu Island, Vancouver, B. C., LB $2,321,039 (2 bidders) constr. 4.62 mi. Trans-Canada Hy., Bell Crossing-Saddle Rock Sect., Proj. 792. Bids Sept. 14. CD 9/7.

▲ **Dominion Bridge Co. Ltd.**, Lachine, Que., CA $3,031,097, superstructures 2 vertical lift bridges near Caughnawaga in Lachine Section, QUEBEC, St. Lawrence Seaway Auth. No. 2 Temporary Bldg., Ottawa, Ont. Bids Aug. 28. CD 9/4, under LB.

▲ **Atlas-Winston Ltd.**, 4781 St. Catherine St. W., Montreal, Que., CA $3,259,525. excavation of channel and constr. dyke, Station 900 plus 00 to 930 plus 00, embankments and CPR bridge substructure Lachine Section, QUEBEC, St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Aug. 21. CD 8/27, under LB.

BUILDINGS—LB & CA

▲ **Fluor Corp. of Canada Ltd.**, 200 Bloor St. E., Toronto, Ont., CA $3,800,000 design and construct, detergent alkylate PLANT, SARNIA, ONT. Imperial Oil Co., 56 Church St., Toronto, Ont. CD 2/6.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Brazil, Sao Paulo**—SUBWAY—BA 10/15—Municipal Comm. Collective Transport, Sao Paulo, construct subway, incl 100 kilometers track and 100 stations. CD 7/1/48.

HEAVY CONSTRUCTION—LB & CA

Empresa Constructora; Lima and Piura, Peru, CA constr. whaling station for processing sperm oil and other products, comprising flensing deck, warehouse, storage tanks, etc., near PAITA, PERU. Archer-Daniels-Midland Co., Investors Bldg., Minneapolis, Minn, U. S. A. and Peruvian Interests.

U. S. POSSESSIONS

BUILDINGS—LB & CA

▲ **Theo. G. Meyer & Sons**, 200 Quint St., San Francisco, Calif. LB $21,504,993. construct and finance, 1,326 units (Capehart) HOUSING, Schofield Barracks, HONOLULU, T. H. U. S. Eng., Box 2240, Honolulu, T. H. Bids Sept. 19. CD 8/13.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **India, Bombay**—BA 10/23—At office K. V. Ekambaram, ch. engr., Kosi Proj., Patna, (Bihar), constr. Hanumannager Barrage, Kosi Proj. at Bihar, North East India. Proj. includes main and diversion spillways, intervening and guide bunds, two earth dams, for Govt. of India, Bombay. $19,000,000.

Australia—BA 1/29—Country Roads Board, Exhibition Bldg., Carlton, Melbourne, Australia, (1) bridge over Yarra River, 410 ft. long, 149 ft. wide, of which the central portion (63 ft. over-all width) is continued as an elevated structure for an addnl. length of 1,880 ft., (2) vehicular and tramway overpass in Flinders St., 600 ft. long and 58 ft. between kerbs, in Melbourne and South Melbourne. Plans deposit £100.

HEAVY CONSTRUCTION—LB & CA

▲ **Vianini (Liberia) Ltd.**, Monrovia, Liberia, LB $6,124,533, (concrete piped; LB $5,925,066 (metal pipe) (2 bidders), constr. Gbarnaga-Kailahun Projects SM2-B (2), SM 1-C, SM 1-D and SM 1-E, approx. 144.6 mi. Liberian Govt. Highways Program in Western Province, LIBERIA. Dpt. P. Wks. & Utilities, c/o Secy., Monrovia, Liberia. Bids Aug. 15. CD 6/22.

(Proposal Advertisement see pp. 150 to 153)

Another **Big Office Building**

by

AMERICAN BRIDGE

This imposing 30-story steel-frame structure is the latest New York office building to be fabricated and erected by American Bridge. Known as 425 Park Avenue, it fronts 201 feet on the avenue, 146 feet on Fifty-fifth Street and 132 feet on Fifty-sixth Street.

Approximately 5,900 tons of structural steel went into its framework. Field connections were made with high strength bolts, regular bolts and welding—which held construction noises to a minimum.

Working in crowded areas like this is routine to American Bridge. From the old Flatiron Building in 1901, to the Empire State Building in 1930, to the Socony Mobil Building in 1956, American Bridge has become more and more dexterous in handling big jobs in big cities.

The experience thus acquired over the past fifty-five years qualifies American Bridge to handle any type of structural steelwork with skill and speed. For more information concerning our ability to help you with your construction problems, contact the nearest office, or write direct to our Pittsburgh headquarters.

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ST. LOUIS • SAN FRANCISCO • TRENTON
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

The
425 Park Avenue
Building
Manhattan, New York City

• • •

Designed by
Kahn and Jacobs, Architects, and
Charles Mayer, Engineer

• • •

General Contractor
George A. Fuller Company

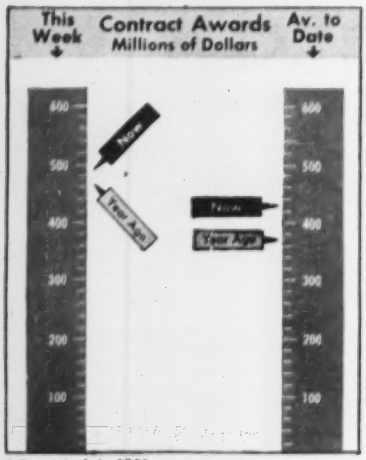
INTERESTING MOTION PICTURES AVAILABLE—"Building for the Nations" and "The Suspension Bridge," two entertaining and educational films, are now available without charge to business, fraternal and civic organizations, churches, schools and colleges. Write to Pittsburgh office for bookings.

USS

UNITED STATES STEEL

Construction Scoreboard

Activity this Week



* 6 Day Week in 1955

AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 40 wks 1956	Chge %
	$ millions		
Federal	$46.6	$1,367.5	+5
State and Municipal	199.3	5,052.0	+21
Total Public	245.9	6,419.5	+17
Total Private	245.1	10,579.1	+16
U. S. Total	$491.0	$16,998.6	+16
By Type of Work			
Waterworks	$14.4	$276.4	+33
Sewerage	14.7	470.9	+51
Bridges	21.5	472.1	+24
Highways	71.8	1,901.9	+11
Earthwork, Waterways	32.9	611.4	+49
Buildings:			
Public, Excl. Housg.	45.9	1,587.5	+19
Public Housing	23.7	268.5	+22
Private Housing	103.9	4,356.7	−12
Commercial	84.2	1,496.6	+15
Industrial	51.7	4,199.5	+93
Unclassified	26.3	1,357.1	−15
U. S. Total	$491.0	$16,998.6	+16

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

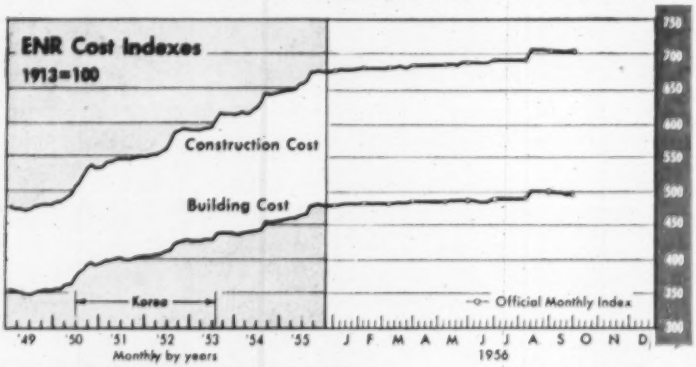
	Week of Sept. 27	Cum. 39 wks 1956	Chge '55-'56 %
	$ millions		
Corporate Securities	$68.8	$3,784.2	+45
State and Municipal:			
All Except Housing	101.3	3,398.0	+10
Housing	...	42.3	−41
Federal Loans	...	125.7	+16
Federal Aid	...	1,070.0	+25
Total Nonfederal	$170.1	$8,420.1	+25
Federal Appropriations:			
In U. S.	$...	$3,460.3	+2
Outside U. S.	...	15.9	−81
Total New Capital	$170.1	$11,896.3	+17

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Sept. 27, 1956	% Change from Aug. 30, 1956	% Change from Sept. 29, 1955
Construction Cost	703.88*	−0.15	+4.5
Building Cost	499.54*	−0.1	+4.1

* Official Monthly Index for October.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850. 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



WAGE RATES, 20-cities' average

	Sept. 1956	% Change from August 1956	% Change from Sept. 1955
Common	$2.192	0	+4.7
Skilled (average 3 trades)	3.423	+0.2	+4.2
Bricklayers	3.695	+0.2	+4.3
Structural Ironworkers	3.399	+0.2	+3.8
Carpenters	3.175	+0.2	+4.5

MATERIAL PRICES, 20-cities' average

Structural Steel (average 3 mills), per cwt	$5.000	0	+8.7
Lumber, 2x4 Fir, per M fbm	117.290	−1.2	−3.2
Lumber, 2x4 Pine, per M fbm	103.330	−0.8	+2.5
Cement, bulk, per bbl	3.750	+0.8	+5.5
Sand, per ton	2.411	+0.1	+1.6
Ready-mixed concrete, per cu yd	13.430	0	+6.3

ENR INDEX REVIEW

	Construction Cost 1913 = 100	Construction Cost 1949 = 100	Building Cost 1913 = 100	Building Cost 1949 = 100	Volume 1913 = 100	Volume 1949 = 100
1955						
Oct.	673.89	141.27	479.99	136.44	628	182
Nov.	673.20	141.13	479.30	136.25	561	162
Dec.	673.13	141.11	478.70	136.08	544	157
1955 Av.	659.72	138.31	468.80	133.33	600	173
1956						
Jan.	676.36	141.79	480.48	136.58	645	186
Feb.	680.21	142.59	483.08	137.32	736	213
Mar.	680.20	142.59	488.14	137.34	786	227
Apr.	683.28	143.24	485.56	138.02	764	221
May	688.43	144.32	487.36	138.54	684	198
June	692.13	145.09	488.70	138.92	636	184
July	694.75	145.64	489.23	139.07	740	214
Aug.	696.31	145.97	491.22	139.63	583	168
Sept.	704.91	147.77	500.10	142.16	580	168
Oct.	703.88	147.56	499.54	142.00	...	...

MATERIAL SHORTAGES

- **Brick**—Still short in Birmingham; now plentiful in Los Angeles.
- **Cement**—Short in Baltimore, Denver, Toronto. Now adequate in New Orleans.
- **Stainless steel building sheets**—Birmingham deliveries, 6-8 months; Boston, one week for regular customers, December or January for new customers; Denver, four months for rated orders, six to eight months for non-rated orders; Philadelphia, to three months; San Francisco, 30-45 days; Seattle, 90-120 days; Montreal, to 40 days; Toronto, to 126 days; Minneapolis and New York, slow deliveries.
- **Aluminum building sheets, flat**—Short in Denver, New Orleans, Montreal, Toronto taking no new customers.
- **Aluminum corrugated roofing**—Short in Denver and Montreal.

Awards Set September Record

Industrial building bounces back, federal work is nearly double last month, and commercial building jumps ahead

Heavy construction contract awards, as reported by ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY, set a new record for the month of September.

Contracts totaled $1,480 million for the month. The $370-million per week pace was nearly 4% above the rate for September 1955.

Industrial building contracts bounced back from their August slump to average $90 million a week, more than double the September 1955, rate. But even this was well below the high volumes posted in March, April, May and July of this year when contracts ranged from $120 million to $160 million a week.

Other types of construction also showed strong gains last month.

Commercial building awards shot up to an average of $49 million a week—about equal to the year's peak rate (set in January). Contributing to last month's total was a $75-million office building to be built in New York City for Vincent Astor.

Federal construction awards were more than double the low August pace, averaging $34 million a week. Although this volume was not unusually large, it helped to pull the federal award total—on a cumulative basis—into the "plus" column. At the end of the first nine months, federal awards are 2% ahead of the same period last year.

Highway awards dropped in September. This was reflected in the overall decline in state and municipal contract awards, which were down for the third consecutive month. This was true even though the $113 million a week average in municipal contracts was nearly 4% higher than September 1955—and was the best September on record in terms of average weekly volume.

Earlier this year, state and municipal awards started off far ahead of 1955 but the margin of gain has been shrinking rapidly. May and June awards were 20% to 27% ahead of 1955; July was up 18%; August, 11% and September, up only 4%.

Several municipal contract categories were strong, however, last month. These included sewerage, earthwork-irrigation-drainage, bridges, public housing and other public buildings. All of these topped the August award rate. However, waterworks contracts slipped to the lowest level of the year.

Housing volume was disappointing in September. The sharp upturn in August contracts for private mass housing was followed by an even sharper downturn in September.

This drop is significant because September is generally a strong month for housing awards, which follow a U-shaped seasonal pattern with a big spring, a drop in the summer, and then another upsurge in the fall.

This year, the September average weekly rate plummeted to $71 million, 41% under September 1955, and the lowest rate in two years.

ENR Cost Indexes Steady; Lumber Dips; Cement Rises

Weakness in the lumber market led to a further softening of lumber prices this month. Douglas fir prices were down 1.2%; southern pine was down .8%. These declines offset cement price increases in four eastern cities and kept ENR Construction and Building Cost Indexes relatively steady.

The ENR Construction Cost Index edged down 0.15% during the month, from a September value of 704.91 to an October reading of 703.88 on the same basis, the ENR Building Cost Index creeped down from a September figure of 500.10 to an October reading of 499.54, both indexes are based on 1913 equals 100.

Boston, New York and Philadelphia reported price increases of 15 cents a barrel for cement, while the mill price in Baltimore moved up 19 cents. The increases took effect Oct. 1.

(*B&F continued on page 142*)

Engineering Construction Contracts September 1956

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $103,000; *other buildings,* $344,000

Four Weeks—Thousands of Dollars (000 Omitted)

	September, 1956							U. S. Cumulative			Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	Nine Months 1956	Nine Months 1955	% Change '55 to '56	September 1956
Public Works											
Waterworks	608	1,351	5,010	3,470	3,278	2,801	17,018	262,174	205,061	+28	1,252
Sewerage	838	6,269	8,807	12,578	10,946	9,992	49,430	456,370	300,936	+52	5,014
Bridges	3,147	4,262	6,980	17,606	5,291	4,325	41,616	448,556	352,081	+25	7,620
Earthwork and waterways	8,536	5,533	10,589	5,523	8,934	21,129	60,244	578,356	406,647	+42	18,279
Streets and roads	7,717	27,975	36,221	32,111	51,293	20,760	176,017	1,829,935	1,662,296	+10	12,677
Public buildings, residential	984	9,055	9,344	7,390	6,572	1,444	26,699	244,541	220,318	+11	7,196
Other public buildings	13,222	22,628	37,178	35,768	30,442	17,938	156,576	1,541,477	1,311,572	+18	16,255
Unclassified	3,776	4,376	12,174	5,624	30,161	4,119	60,230	814,175	878,241	−7	6,115
Total Public	**38,828**	**72,764**	**126,393**	**120,070**	**147,417**	**82,358**	**587,830**	**6,173,584**	**5,342,152**	**+16**	**74,402**
Federal government (included in above classifications)	7,418	5,575	47,516	8,324	39,118	27,805	135,756	1,320,746	1,289,192	+2	31,567
Private											
Bridges								4,494	1,829	+141	
Industrial buildings	3,920	19,266	73,870	83,098	111,563	68,473	360,190	4,147,809	2,055,192	+102	20,792
Mass housing	6,652	115,580	34,033	46,919	54,180	24,726	282,090	4,253,299	4,777,739	−11	3,840
Commercial buildings	12,083	121,424	5,836	32,036	17,404	7,946	197,329	1,412,365	1,272,740	+11	8,570
Unclassified		711	228	19,000	12,603	20,511	53,053	516,314	684,519	−25	339
Total private	**23,255**	**256,981**	**113,967**	**181,053**	**195,750**	**121,656**	**892,662**	**10,334,191**	**8,792,019**	**+18**	**33,541**
Total Engineering Construction:											
September, 1956—4 weeks	**62,083**	**329,745**	**240,360**	**301,123**	**343,167**	**204,014**	**1,480,492**				**107,943**
August, 1956—5 weeks	76,153	488,823	185,248	411,392	418,998	248,728	1,828,462				272,354
September 1955—5 weeks	67,251	566,423	252,091	331,885	401,959	165,080	1,784,199				146,961
Nine Months—1956	**889,506**	**4,190,768**	**1,914,100**	**3,547,290**	**3,576,138**	**2,389,871**		**16,507,685**		**+17**	**1,765,651**
Nine Months—1955	676,815	3,954,746	1,540,648	3,109,125	3,266,793	1,554,131			14,134,171		1,266,585
% Change '55 to '56	+31	+6	+24	+14	+9	+54					+39

Consulting Engineer* New Business in 1955 – by Type of Work

As reported by ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY

1,224 firms took on 4,344 heavy construction projects costing an estimated $6,492 million

Type of Work	All Engineers Number of Firms	All Engineers Number of Projects	All Engineers $ Volume Millions	Total '55 Volume of All Types $1,000,000 or More Number of Firms	$1,000,000 or More Number of Projects	$1,000,000 or More $ Volume Millions	$500,000-$1,000,000 Number of Firms	$500,000-$1,000,000 Number of Projects	$500,000-$1,000,000 $ Volume Millions	$100,000-$500,000 Number of Firms	$100,000-$500,000 Number of Projects	$100,000-$500,000 $ Volume Millions
Other Than Building												
Waterworks	296	896	$506.4	152	654	$472.2	52	109	$18.4	92	133	$15.8
Sewerage	374	941	447.1	182	659	394.0	67	123	30.3	125	159	22.8
Bridges	75	149	664.7	52	117	655.5	11	15	7.0	12	17	2.2
Highways	176	323	1,101.0	119	251	1,089.5	19	28	5.6	38	44	5.9
Earthwork, irr., drain	78	168	876.2	55	122	871.4	7	21	2.5	16	25	2.2
Airports	99	191	135.4	64	145	123.1	12	21	7.0	23	25	5.3
Unclassified	224	430	515.9	136	312	489.1	31	58	15.7	57	60	11.1
Total	...	3,098	4,246.7	...	2,260	4,094.8	...	375	86.5	...	463	65.3
Building												
Industrial buildings	294	383	1,212.3	137	242	1,177.9	30	38	14.2	97	103	20.2
Mass housing, commercial and public buildings	425	863	1,033.1	289	673	959.6	82	103	48.0	84	87	25.5
Total	...	1,246	2,245.4	...	915	2,137.5	...	141	62.2	...	190	45.7
Federal (incl in above)	103	209	353.2	67	144	336.9	18	40	11.2	18	25	5.1
All Heavy Construction	1,224	4,344	6,492.1	536	3,175	6,232.3	226	516	148.7	462	653	111.0

* Not including architect-engineers who will be reported separately.

Consulting Engineers' Business Up 5% in 1955

Dollar volume of consulting engineers' new business climbed another 5% in 1955.

They were called upon to handle a sharply higher volume of industrial plant design and the design load also increased substantially for other key types of construction.

This is clear from the latest annual ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY analysis of consulting engineers' new business.

Last year, 1,224 consulting engineers took on a total of 4,344 design jobs. These projects had a total estimated cost of nearly $6.5 billion. (The survey covers only those firms starting new projects reported in ENR and CD adding up to $100,000 or more.)

There was a slight decline during 1955 in the number of consulting engineers in the $100,000-and-up class. Last year's total dipped 2% below the 1954 count.

Most of this dip—if not all—came in the number of firms active in the highway design field. The volume of new highway work received by consulting engineers was large last year, but it could not match 1954's record $2-billion rate, which reflected the peak of the toll highway era.

Offsetting the 1955 drop in new highway business were increases in industrial building, waterworks, bridges, earthwork-irrigation-drainage, and federal military airport design jobs. The result was a 5% increase from 1954 to 1955 in the estimated cost of all projects started by consulting engineering firms covered in the survey. This 5% increase in dollar value was significant because it came on top of a seam-bursting 30% rise in 1954.

Last year's high level of activity made it possible for some of the smaller firms ($100,000 to $500,000) to move up into the medium size bracket ($500,000 to $1 million). And, the group of consulting engineer firms in the million-dollar bracket stayed at 1954's high level.

There were 23% more consulting engineers—226—with total new business of $500,000 to $1 million in 1955 than in 1954. In contrast, the number of firms in the smaller $100,000 to $500,000 category shrunk 13% to a total of 530.

All three size groups shared in the 1955 upsurge in industrial building plant design contracts.

(*Continued on page 144*)

How Consultants'* New Business in '55 Compared with '54

As reported by ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY

Type of Work	All Engineers Per Cent Change '54-'55 Number of Firms %	All Engineers Number of Projects %	All Engineers $ Volume %	Total '55 Volume of All Types $1,000,000 or More Per Cent Change '54-'55 Number of Firms %	$1,000,000 or More Number of Projects %	$1,000,000 or More $ Volume %	$500,000-$1,000,000 Per Cent Change '54-'55 Number of Firms %	$500,000-$1,000,000 Number of Projects %	$500,000-$1,000,000 $ Volume %	$100,000-$500,000 Per Cent Change '54-'55 Number of Firms %	$100,000-$500,000 Number of Projects %	$100,000-$500,000 $ Volume %
Other Than Building												
Waterworks	– 7	–11	+55	– 9	–14	+89	+11	+19	+33	–13	–13	– 1
Sewerage	– 4	–12	– 0.4	+ 4	–12	0	+12	– 5	+ 9	–19	–20	–16
Bridges	+ 3	+23	+111	– 9	+16	+112	+120	+150	+93	+ 9	+21	– 2
Highways	–26	–25	–46	–12	–11	–46	–27	–39	–35	–51	–57	–55
Earthwork, irr., drain	–10	+11	+27	+10	+40	+27	–12	+162	+71	–45	–55	–49
Airports	+36	+10	+ 6	+39	+ 7	+ 2	+50	+50	+126	+21	+ 4	+76
Unclassified	–16	–23	– 7	– 4	–21	– 6	+ 3	+38	+40	–40	–51	–42
Total	....	–12	– 5	....	–10	– 5	....	+11	+25	....	–31	–23
Building												
Industrial buildings	+25	+20	+79	+34	+26	+82	+20	+ 9	+ 1	+14	+12	+26
Mass housing, commercial and public buildings	+ 5	– 2	+ 2	+ 7	– 4	+ 1	+17	+17	+22	– 7	– 8	– 2
Total	....	+ 4	+33	....	+ 3	+34	....	+15	+17	....	+ 2	+ 9
Federal (incl in above)	+43	+14	+177	+52	+ 5	+179	+157	+344	+348	–15	–34	+19
All Heavy Construction	– 2	– 8	+ 5	0	– 6	+ 5	+23	+12	+21	–13	–24	–13

* Not including architect-engineers who will be reported separately.

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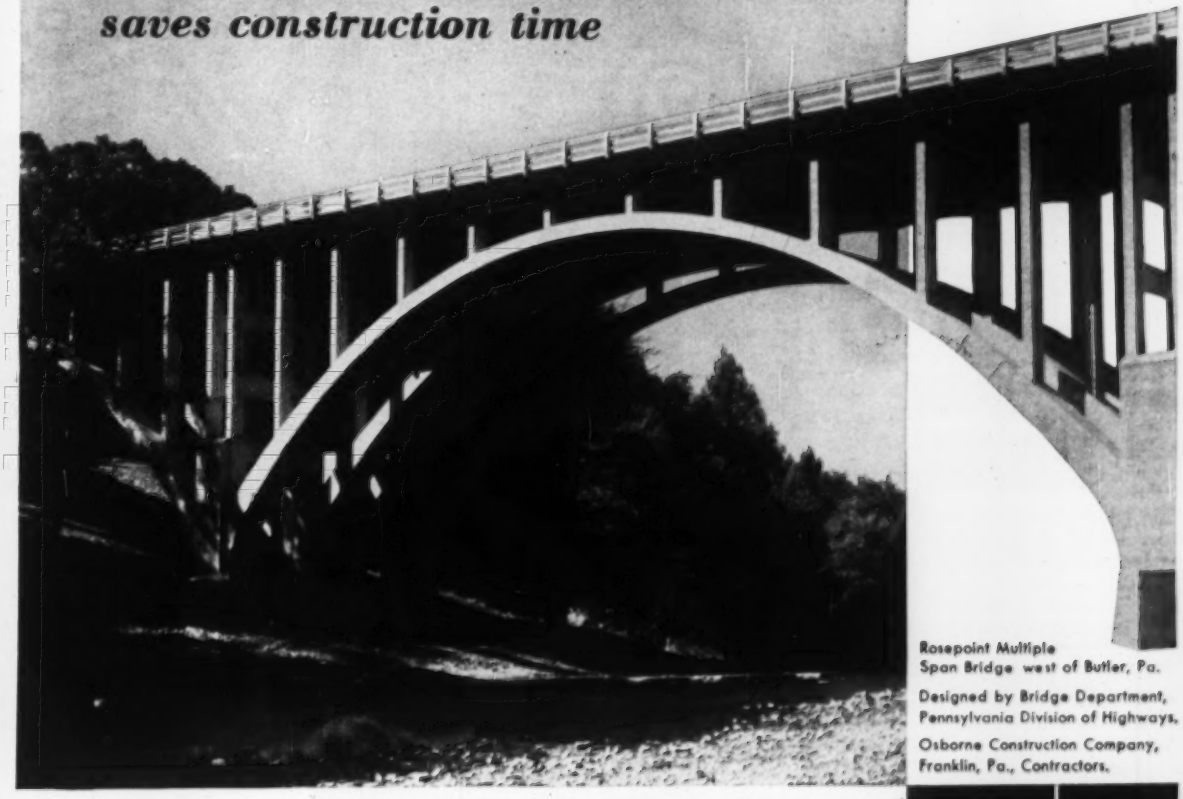

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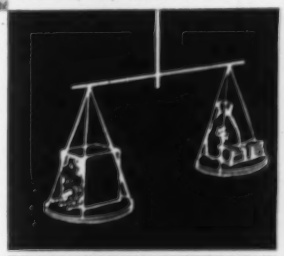
Structures built with reinforced concrete are rugged, too . . . highly resistant to wind, shock, and quake. They are more weather resistant, and require less maintenance. On your next bridge or overpass, design for *rugged beauty plus economy* . . . design for reinforced concrete.



CONCRETE REINFORCING STEEL INSTITUTE

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(Continued from page 142)

The number of consulting engineers active in the industrial field jumped 34% for the $1 million-and-over group; 20% for the firms in the $500,000 to $1 million bracket; and 14% for those in the smaller business category.

From a dollar standpoint, the most spectacular climb was an 82% increase in the dollar value of industrial building work signed up by the $1-million-and-over group.

(This survey will be supplemented in a later issue by an analysis of new business of architect-engineer firms, which may include some building work which is not shown in the accompanying tabulation.)

Sewerage Work Goal

Department of Commerce sees $22.2 billion outlays for work in next two decades

The United States should spend $22.2 billion in the 20 years from 1955 through 1975 to build an adequate sewerage system.

That's the goal set forth by Walter L. Picton and A. T. Levie of the U. S. Department of Commerce Business and Defense Services Administration in a new study just released.

Needs of the 20-year program—projected in constant 1954 dollars—were summarized as follows:

- **$5.8 billion to eliminate present deficiencies.**
- **$8.1 billion to offset obsolescence and depreciation.**
- **$8.3 billion to provide for growth in population and the resultant increased water use.**

One of the basic projections in the study calls for a rise in population from 164,600,000 in 1955 to 206,600,000 in 1975.

Along with this, the study assumes a continued increase in population gains in cities as against rural areas (where fewer families are served by public sewerage systems).

In 1955, approximately 100,000,000 persons were served by public sewerage systems. By 1975, this figure is expected to climb to 134,000,000.

The projections on needs for sewerage construction ". . . are considered conservative with respect to population served and requirements for service, but with respect to annual construction and accumulated investment value, they present the most optimistic picture considered to be within the range of realism," Picton and Levie pointed out in their report.

PLANNED CITY of Forest Park, Ohio, is private enterprise sequel to federally-built "greenbelt" towns of 1930s, one of which lies just south of this new community.

10,000-Home City Now Under Way

Depression-inspired community planning by the federal government has a direct link to a 10,000-home completely-planned city officially "opened" last week 13 mi north of Cincinnati.

The new city-Forest Park—is separated only by a heavily-wooded county park from its publicly built predecessor—Greenhills, a 700-acre development (represented by shaded area in diagram).

Of the six neighborhoods slated for Forest Park, three are under construction or completed. But, even in its unfinished form, the new city is worth noting for a number of reasons:

- It's being built on a 3,700-acre tract that was part of the land purchased by the federal government 20 years ago after planning officials picked the site as one of the four best in the nation for a completely-planned suburban community.
- Houses will range in price from $14,000 to $60,000.
- Architectural and landscaping review is required before any house can be built in the city—regardless of price.
- Improved lots will be sold to homebuilders for development according to the city's master plan; individuals who want to build custom houses also will be able to buy improved lots.
- Developers of Forest Park have agreed to subsidize construction of schools by paying the school board a fixed amount for each house built and by selling school sites to the school board at a substantial discount.
- The shopping and business center will cover 450,000 sq ft, will include department stores, variety stores, supermarkets and other shops.
- Forest Park will have 239 acres for office and light industrial development.

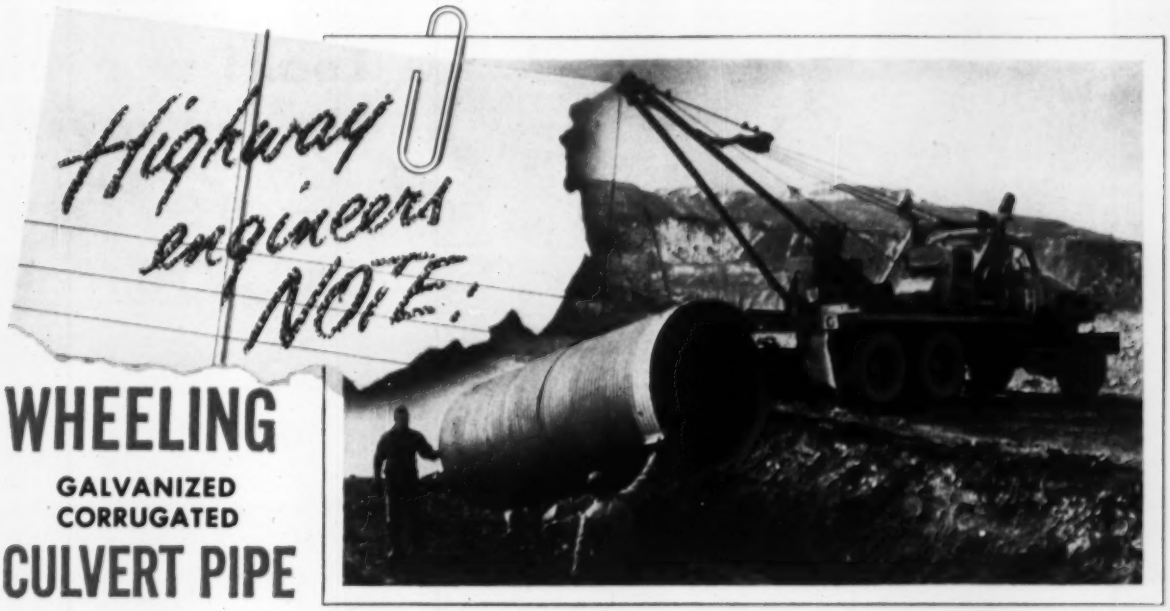
Forest Park has had a unique history. When the government assembled 5,930 acres through the Federal Resettlement Administratioin, it selected Justin R. Hartzog, a wellknown town planner, to prepare a master plan for the entire tract.

The plan provided for immediate development of the 700-acre south central area with a community that was later incorporated as Greenhills.

In 1952, the U. S. Public Housing Administration planned to sell the tract at public auction. A local group formed a non-profit organization, the Cincinnati Community Development, and bought the 3,400 acres offered.

The group checked with developers, finally selected the Warner-Kanter Companies and resold the land to them under stipulation that a mutually-acceptable master plan be followed.

To produce the plan, Warner-Kanter employed Vogt, Ivers, Seaman and associates, Cincinnati architects-engineers, and Justin R. Hartzog.



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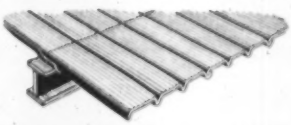
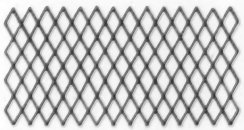
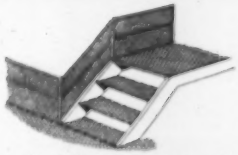


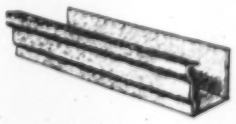
Tri-Rib Steel Roof Deck—Lighter, stronger, saves structural steel, cuts gross weight as much as 40%.



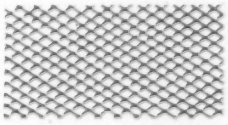
Steelcrete Expanded Metal for Reinforcing—Distributes concentrated loads over a larger area.



Expanded Metal Railings, Guards, Treads, Walkways. Cuts maintenance. Permits full visibility and ventilation.



Gutters and Leaders—Heavy pure zinc coating. Provides long life, rust-resistance, sure protection.



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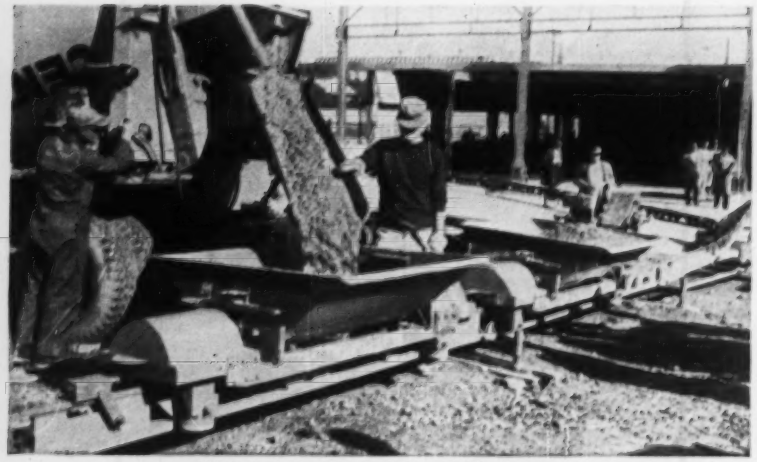
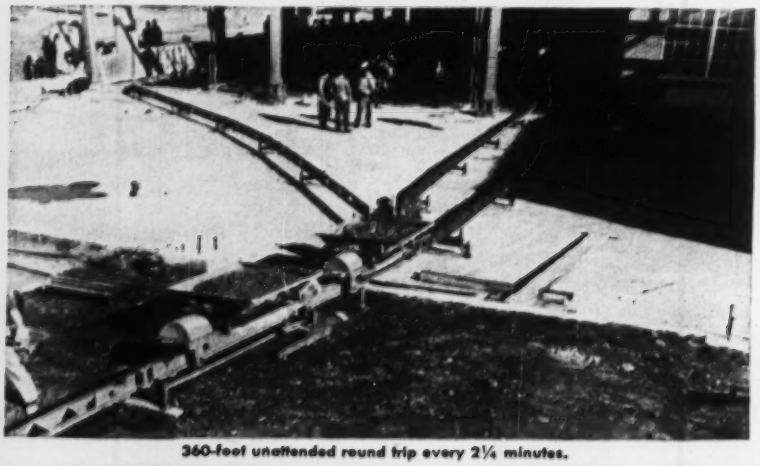
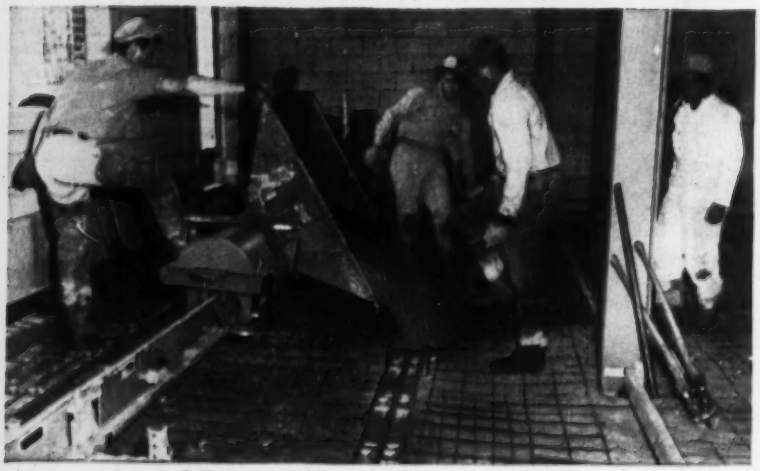


10 cf. load of concrete for the Railporter trailer.



360-foot unattended round trip every 2¼ minutes.



Rail stands straddle reinforcing mesh and conduit.

Look! No runways!

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"The Rex Railporter proved the most economical method of performing this pour," states General Superintendent Fred Shelong of Klug & Smith, Inc. "Not only did it reduce manpower, it also eliminated the need for runways."

On this job, the Rex Railporter, complete with trailer unit, covered an average round-trip distance of 360 feet every 2¼ minutes with a 20-cubic-foot load of concrete...better than 18 yards an hour with only six men to charge, convey, place and puddle.

The Rex Railporter can save real money for you, too. A portable transport for construction materials, it runs on a single rail which is easily handled and laid by two men. Rail stands are adjustable for rough terrain. On this job the rail straddled the reinforcing mesh and conduit, eliminating the need for runways.

The Railporter is self-powered, runs unattended between loading and discharge points, stops automatically where desired and can be dumped to either side. Power and trailer units each carry 13 cubic feet of material (liquid level) or 10 cubic feet of concrete.

The Railporter is available with curved rail sections and switches and because of its adjustable rail stands, operates over any ground condition ...reinforcements, mud, open cuts, excavations, tunnels, water or elevations.

The gasoline power unit can haul a trailer unit of equal load capacity and the two units move along the rail at a clip of better than 300 feet a minute. See your Rex Distributor or write for Bulletin 56-47. Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wis.

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Shades of the American Plan

Southern communities use local ordinances to hamstring union growth but success is dimmed by courts and labor

Following the lead of several other southern communities, Eupora, Miss., a small city 100 mi northeast of Jackson, has passed an ordinance imposing a costly privilege license on persons engaged in organizing or promoting labor unions.

Such ordinances have come under heavy attack by the building trades, which view them as part of an open shop campaign to weaken and destroy unions. They reflect some of the conditions the AFL-CIO is up against in its organizational efforts in the South. And they point up the federation's interest in political action on the local as well as on state and national levels.

The Eupora ordinance becomes effective Oct. 4. Its requirements are these:

- No one can engage in the practice of organizing or promoting a labor union without first applying to the Mayor and Board of Aldermen for a license.
- To be eligible for a license, one must be of good moral character and a resident, for at least three months, of the city.
- The license fee is $1,000.

Violation of the ordinance carries a fine of $100, or 30 days in jail, or both.

• **Not unique**—Cities in which similar ordinances have been tried include Madison, Fla., Charlotte, N. C., and Baxley and Carrollton, Ga.

The future of the ordinances is shaky. The Madison law, which imposed an annual fee of $300 plus $25 for each member organized, was killed earlier this month by a Florida Circuit Court on two grounds: It violated the state constitution and was in conflict with the Taft-Hartley Act because it impaired the right of workers to organize.

The validity of the Carrollton ordinance, which imposes a $1,000 license fee plus $100 for each day the license is effective, was questioned last July by the Federal Court of Appeals, Fifth Circuit. In directing a Federal District Court to enjoin enforcement of the ordinance in a State Court, the Circuit Court said the effect of the ordinance is "exorbitant and punitive."

Meanwhile, a Georgia court has refused to rule on the validity of the Baxley ordinance, which imposes a $2,000 annual license fee plus $500 for each union member obtained. But the court's refusal was based on procedural grounds only.

• **Open shop and politics**—The Madison ordinance, shortly after its enactment earlier this year, was described by Richard Gray, President of the AFL-CIO Building and Construction Trades Department, as "fantastic."

It was cited by Gray at the department's legislative conference last March as one of the examples of open shop efforts on the local political level to weaken and destroy all trade unions, including the building trades. "This," he said, "typifies the forces that are opposing us. Ours is not a local, state or federal fight alone. Ours is a fight against the open shop, the present day American Plan which to me is much more dangerous, much more intensified. . . ."

The American Plan, a carefully organized anti-labor campaign sponsored in the 1920's by a number of employer associations, promoted open shop conditions through such devices as yellow-dog contracts, propaganda and injunctions.

Local anti-labor legislation like the Eupora ordinance is one of the targets of the AFL-CIO's current political activity now being conducted under the direction of its Committee on Political Education.

COPE, which has reminded the federation's membership that "gains won at the bargaining table can be whittled down or wiped away" by a city council as well as by Congress or a state legislature, is—through its local agencies—taking an active interest in local elections. Here, as on the other levels, the aim is election of officials friendly to working people.

Nonunion Contractors Unite

Nonunion contractors in the Phoenix area have formed the Independent Contractors Association of Arizona.

The organization is pledged to fight violations of the state's right-to-work and anti-picketing laws and of the Taft-Hartley Act.

President of the 52-member association is Douglas Dana of Phoenix.

• **Organization**—At the same time, the AFL-CIO is approaching the problem from another direction—education.

When the Executive Council of the AFL-CIO met in Forest Park, Pa., last month, one of the problems on the agenda was organization of unorganized workers, a task now under the direction of John Livingston. One of the principal obstacles to membership drives in the South, where the campaign was launched most vigorously, is the anti-union attitude reflected by ordinances such as the Eupora one.

In an effort to overcome that attitude, the Executive Council approved preparation of plans for an educational program to be conducted in the South in the hope of convincing employees and businessmen alike that unions are beneficial to both the individual worker and his community as a whole.

A Truce Is Reached

Temporary solution found in Hanford labor dispute

Unions and contractors involved in a dispute over isolation and travel pay for construction workers at the Hanford Plutonium Works near Richland, Wash., have agreed to a one-year extension of the status quo while a labor relations panel seeks to resolve the issue.

The extension was requested by the Atomic Energy Commission Labor Relations Panel in telegrams to the eastern Washington Chapter, Associated General Contractors, and the teamsters, operating engineers and cement masons.

Following a 76-day strike after the union members were taken out from under the project agreement and put under existing AGC agreements, the panel had recommended continuation of free bus service and isolation pay of $2.62½ to workers on construction projects within the reservation.

Under the extension, pre-strike conditions will be maintained for a year without prejudice to either side. Contractors have taken the position that isolation pay has not been written into contracts for Army construction in the same area and that such pay is not given other workers who are not members of the disputing unions.

Still to be resolved are two lawsuits. One is by Morrison-Knudsen Co. against the teamsters and operating engineers for damages sustained during the strike. The other is by unions against contractors to recover approximately $800,000 in isolation pay.

(*Labor continued on page 148*)

Fringe Benefits

Chamber of Commerce sees expanding element of cost

Hourly wage rates are no longer an accurate measure of worker income or labor costs, according to the U.S. Chamber of Commerce, because of the growing significance of fringe benefits.

Based on a survey of 1,000 firms, the Chamber of Commerce estimates that the cost of fringe benefits in 1955 averaged $819 per employee, representing an increase of $99 since 1953. Items included in this element of cost were payments and contributions for such things as pensions, vacations, holidays, insurance, social security and unemployment compensation.

"During recent years pensions, social security and a host of other benefits have substantially increased both the well-being of employees and the cost of doing business," said Emerson Schmidt, director of the association's Economic Research Department. "Vacations, holidays, rest periods and other payments for time not worked have given workers increased compensation for each hour actually on the job. They have at the same time increased the employer's cost of each hour of productive labor."

Highest payments, the survey disclosed, were made by companies in the Northeast. The grand total for the nation as a whole was estimated to be $36 billion. But the amounts paid by individual employers was found to vary considerably, ranging from 5% to more than 50% of payroll.

When broken down, the 1955 average of $819 had these components: pensions and insurance—$254; vacations and holidays—$254; programs imposed by law (social security, unemployment insurance, workmen's compensation, etc.)—$145; rest period—$89; miscellaneous—$77.

Results of the survey have been put in booklet form—"Fringe Benefits 1955", available from the national organization.

Eisenhower, Nixon, Reuther Discuss Shorter Workweek

At his press conference last week, President Eisenhower expressed his approval of a four-day workweek in principle but made it clear that shorter working hours should be achieved through normal economic forces and not by government edict.

His remarks stemmed from a Colorado Springs prediction of Vice-President Nixon that a four-day workweek and a fuller life for every American are goals that may be achieved in the not too distant future. Since then, Walter Reuther, head of the United Auto Workers union, has been seeking commitments from Republican leaders to support federal legislation to reduce the workweek.

"Now, workweeks, length of workweeks, prices, wages come about as a result of great economic forces and economic developments," President Eisenhower said. He noted that an Administration can help to establish a climate in which everybody's efforts can be rewarded fully but added: "We do not, by any manner of means, believe that government should go and establish these things by fiat and say 'this is it'."

The UAW, which proposes to seek a four-day workweek in 1958 collective bargaining, has suggested that immediate steps be taken through federal legislation, including amendments to the Fair Labor Standards Act, toward a gradual reduction of hours of work.

Nonunion Contractors Face Union Alliance in Toronto

Five of the building trades in Ontario have joined forces in an effort to unionize construction work in Metropolitan Toronto.

The multi-million-dollar industry previously had defied organizational drives by the unions separately. Nonunion contractors doing municipal construction work form the immediate target, but the unions also have their eyes on building contractors in the home construction field, where nonunion contractors reportedly are paying wages far below going union rates.

Those making up the united front are the teamsters, laborers, carpenters, operating engineers and iron workers.

Union Membership Drives Are Under Way in Hawaii

As contractors in Hawaii get set for one of their busiest seasons with the start of a $100-million military housing program, renewed efforts are under way to unionize the islands' construction workers.

Latest development is the bidding for the trowel trades by rival groups.

Arthur A. Rutledge, leader of the teamsters in Hawaii, announced that he has been given the signal to organize by John E. Rooney, president of the Operative Plasterers and Cement Masons International Assn., AFL-CIO.

Two days later, Solomon Aki and Revocato Medina, officials of Local 368 of the laborers union, reported that leaders of the trowel trades had come to them and said they didn't want to come under the Rutledge leadership.

Rutledge seeks to organize plasterers, cement masons, bricklayers and tile setters as a new division of his teamsters. He sees a potential membership of 1,500.

In addition to the Rutledge drive, two other membership drives have been launched on the islands. John Montrone, international representative of the painters union, has been in Hawaii for six months. And Charles F. Nicholes, general representative of the carpenters union, has been there since July. Both report "satisfactory" progress.

Canadian Project Stalled By Internal Labor Dispute

Several major British Columbia construction projects were stalled last week by a wildcat strike of tunnel and rock workers.

The strike stems from an internal dispute in Local 168 of the laborers union over existing labor contracts executed last January by the union's international officers. After the contracts were rejected by local members, the officers were suspended by the international and the local was placed in trusteeship. A group of local members opposed the move, reinstated the officers and have attempted to gain recognition and negotiate as an independent tunnel and rock workers union.

Court hearings ensued and an injunction against picketing by the independents was obtained by contractors. This has been ignored. The Building Trades Council and affiliated unions in Victoria have urged management to implement "full procedures of the law" to remove pickets from two of the projects—British Columbia Power Commission's Campbell Lake and Ladore Falls hydro projects on Vancouver Island. Meanwhile, the Canadian Labor Congress has been asked to attempt conciliation between the conflicting labor groups.

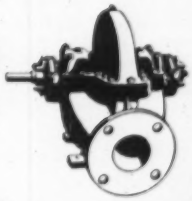
Preferential Hiring Change Is Urged by Michigan Union

A new form of preferential hiring was recommended by one of the unions last week—extension of seniority rights, for hiring purposes, to employers other than the one for whom the employee works.

The recommendation came from the International Executive Board of the United Auto Workers. The board suggests that employers who have contracts with the union be required, when hiring, to give preference in order of sen-

(Continued on page 150)

Look!



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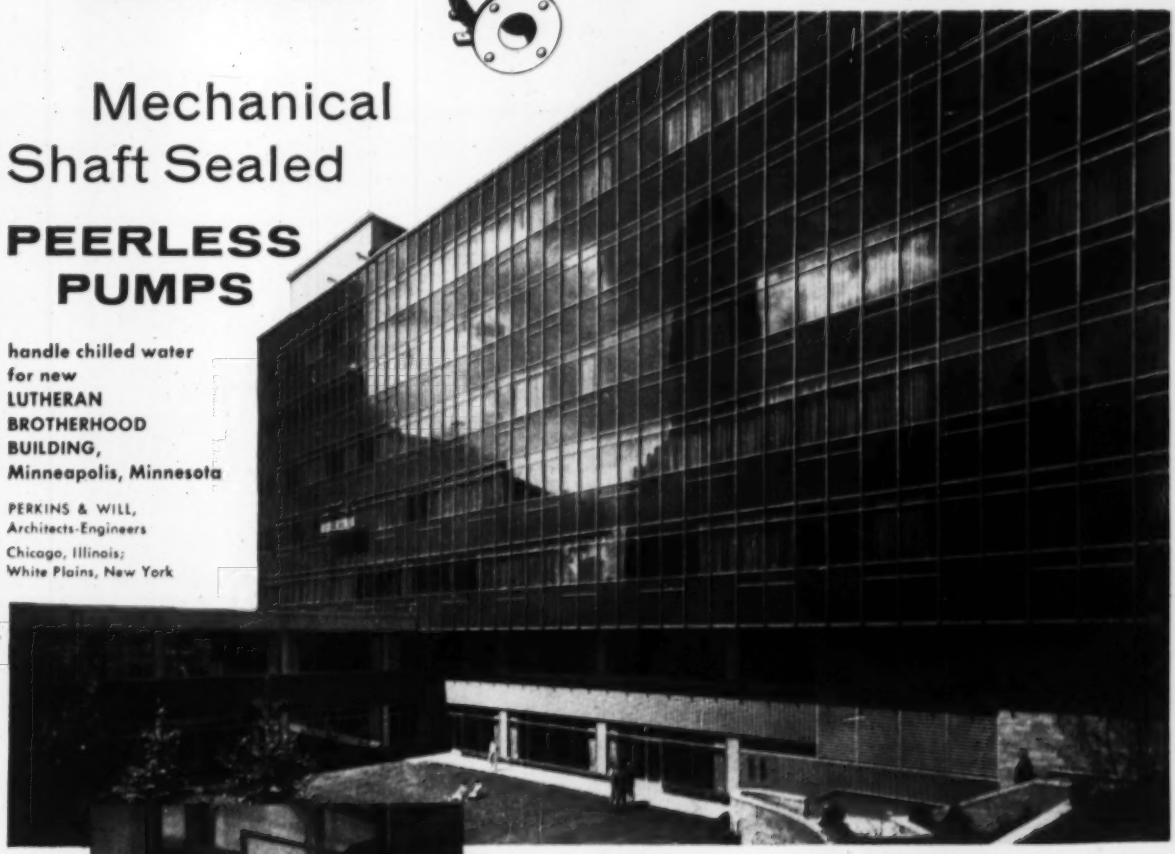

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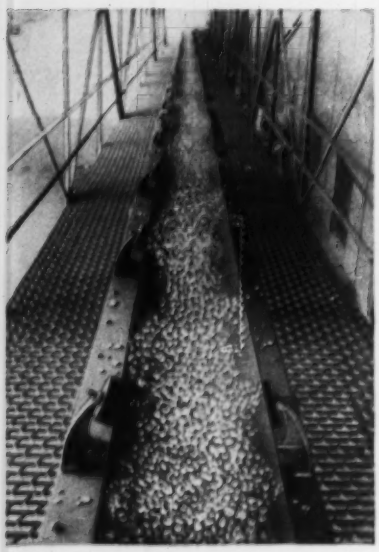

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. . . Labor

iority to workers laid off by other employers in the same area and industry, taking into consideration the individual's seniority with former employers. This would be accomplished at the present time by negotiation of supplemental labor agreements.

Action of the board was occasioned, according to UAW, by the current unemployment of thousands of union members laid off by a number of manufacturing and supply plants recently closed down. In line to benefit most from such a change are older workers who find it difficult to obtain jobs under existing employment practices.

Teamster Pension Plan Aids Early Retirement

Agreement has been reached on a new pension plan for 150,000 teamsters in central and southern states. Designed to encourage early retirement, the program provides for voluntary retirement at age 60 with monthly payments of $90 for the first five years.

Participants are members of teamster locals in the Central States and Southern Conferences and National Truckaway and Driveaway Conference.

Provision is made for optional retirement between the ages of 60 and 70. Monthly payments, which are exclusive of social security, will drop to $22.50 after the first five years. Cost of the program will be borne by employers.

Payments under the plan are scheduled to commence in February, if the program is approved by the U.S. Treasury Department for income tax purposes.

More Apprentices Sought By Bricklayers Committee

The Bricklayers National Joint Apprenticeship Committee has launched an annual Local Joint Apprenticeship Committee Awards Program to encourage the training of a larger number of apprentices.

Awards will be presented to members of local committees that come closest to meeting the apprentice-journeymen ratio recommended by the national committee. The national ratio now approximates one apprentice to every 10 journeymen. The Bricklayers National Joint Apprenticeship Committee has recommended a ratio of one to five.

Serving on the national committee are representatives of the Bricklayers, Masons and Plasterers International Union, the Mason Contractors' Association of America and the Associated General Contractors of America, Inc.

Labor Briefs . . .

• **Road rates**—Gov. George Leader of Pennsylvania has extended to all of the state's 67 counties the requirement that prevailing wages must be paid by contractors on all state road jobs. The requirement previously applied to only 12 of the larger counties, including Philadelphia and Allegheny.

• **Right-to-work**—The Manufacturers Association of Connecticut says it will ask the State Assembly for a right-to-work law next year. Taking issue with the State Board of Mediation and Arbitration, it denies that its opposition to the union shop has lessened.

• **Zoning laws**—Decrying the decline in construction volume and loss of jobs for its members caused by zoning laws, Westchester County, N. Y., building trades have petitioned all cities and villages in the county to revoke "unrealistic, capricious and unnecessary building restrictions."

• **Older workers**—The carpenters union in Hamilton, Ont., is seeking through the Canadian Labor Congress to get the Unemployment Insurance Commission to remove the age of workers from their jobless insurance books. It says disclosure of age has resulted in discrimination against some older workers.

• **Segregation**—Local 434 of the painters union in Montgomery, Ala., has expelled a union member for fostering segregation and racial discrimination. Charges included attempts to form a rival union and to promote secession from the AFL-CIO.

• **Trouble again**—City and county officials in Florida's Orange County have protested determination of prevailing wage rates by the state's Industrial Commission. They claim the rates, improperly fixed, are high and unrealistic and will put needed construction beyond the government's financial reach.

• **Safety** — Cooperation, consultation education and persuasion were stressed as some of the keys to safety at the Governor's Conference on Worker Safety in Albany, N. Y., last week. Conference marked the launching of a statewide program to cut down the number of on-the-job accidents. Annual cost of such accidents in the state is now estimated to be $750 million.

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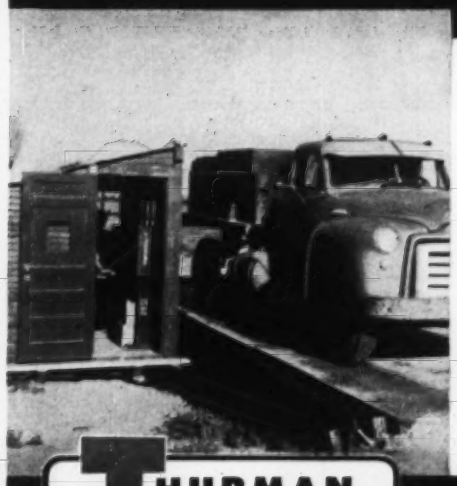

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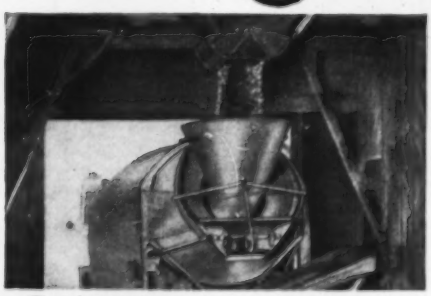
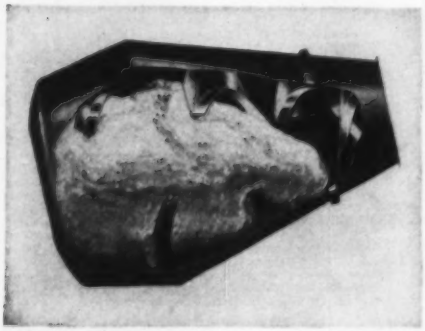


❶ FASTER CHARGING



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Take features like TRANSCRETE'S time-tested outswinging hopper and floating drive — add to them NEW SHORTER OVERALL LENGTH — and it's no wonder TRANSCRETE beats 'em all a country mile for pouring more and better concrete — easier, faster — and at less cost!

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CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: October 18, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Canal Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 18th day of October 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Herkimer	U. S. 92	Lock 18 Erie Canal near Herkimer		New Lock Gates and Lowering Lower Sill	5% of Bid Plans $10	Not Published
Oneida	MTC 56-5	New York State Thruway-Mohawk Section-Sub. 9 (Thruway Connection to Utica: North-South Arterial)	1.21 (0.62 Acc.)	Grading & Drainage Hy. Sep. Weld. Plate Girder 102'	$35,000 Plans $15	$650,000
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Building, 301 E. Water St., Syracuse, N. Y.						
Onondaga	FIC 56-11 FRC 56-77	City of Syracuse: Oswego Boulevard (James St. to S.H. 54-3) Syracuse-Mattydale, S.H. 54-3 Phoenix-Syracuse, S.H. 5274 Project No. I-IG-463(13)	2.67 (5.96 Acc.)	ASP. Conc. Ty. 2A = 4.13 Mi. ASP. Conc. Ty. 1A = 0.08 Mi. Bit. D.S. Treatment = 0.14 Mi. Grading, Drainage & Misc. Work = 2.28 Mi. 6 Hy. Sepa. Comp. I-Beams 155.6', 181', 125.3' 153.1', 109.3' and 196.2' 1 RR-Hy. Sep. Comp. I-Beam 390' 1 Double Box Frame Bridge 38'	$440,000 Plans $100	$8,147,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court St., Buffalo 2, N. Y.						
Erie	BIST 56-9	Connection Between New York State Thruway-Niagara Section-Sub. N8 and Base Line Road (Buckhorn Island State Park)	1.18	APS. Conc. Opt. = 1.16 Mi. Misc. Work = 0.02 Mi. Comp. I-Beam Bridge = 60'	$10,500 Plans $15	$188,000
Erie	FINTC 56-1	New York State Thruway-Niagara Section-Sub. N4 (Washington St. to Franklin Sts.) Project No. I-865(7)	0.21 (0.11 Ramp)	16 Span Viaduct Structure 7 Span Elevated Ramp	$190,000 Plans $50	3,408,000
Erie	FINTC 56-2	New York State Thruway-Niagara Section-Sub. N6, Pt. 3 (Amherst to Ontario Sts.) and 5 Cross Sts. or Acc. Rds. Project No. I-855(8)	0.83 (0.74 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide = 1.02 Mi. Asp. Conc. Pavt. = 0.04 Mi. Bit. Mac. Pavt. = 0.11 Mi. Misc. Work = 0.04 Mi. 4 Hy. Sepa. Comp. W. F. Beams 134.5', 96', 129.3' & 85' 1 RR-Hy. Sep. W. F. Beam 221'	$245,000 Plans $100	4,457,000
Erie	NTC 56-3	New York State Thruway-Niagara Section-Sub. N6, Pt. 1 (Porter Ave. to Ontario St.)	2.38 (0.93 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide = 2.65 Mi. Asp. Conc. Opt. = 0.46 Mi. Misc. Work = 0.20 Mi. 1 RR-Hy. Sep. Comp. I-Beam ±99' Var. 3 Hy. Sepa. Comp. I-Beams 106.8', 54.1'; & 162'	$535,000 Plans $100	9,707,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
St. Lawrence	FATC 56-1	Massena South Side Route Pt. 1, FASH 56-13 Massena South Side Route Pt. 2, FASH 55-7 Massena-Helena Pt. 1, S.H. 1261 Project No. U-580(11)	5.13	Traffic Signal System	$4,500 Plans $10	$85,000
Clinton	CD 56-1	Macomb Military Reservation on the Salmon River at Davis Lake		Remove Existing Dam and Replacing with New Dam	5% of Bid Plans $10	129,500
DISTRICT No. 8, K. G. Rauen, Acting District Engineer, Pleasant Valley Rd., Poughkeepsie, N. Y.						
Westchester	FINETC 56-5 FINET 56-6	New York State Thruway-New England Section-Sub. NE5 (Boston Post Road to Fox Island Road) Project No. I-IN-1068(13)	1.15 (5.19 Acc.)	9" Cem. Conc. Pavt. 2 @ 37' Var. Wide = 3.68 Mi. Grading (Ramps) & Misc. Work = 2.36 Mi. Asp. Conc. Pavt. = 0.30 Mi. 3 Hy. Sepa. Comp. I-Beams 139', 207', and 151.6' 1 Hy-RR Sep. I-Beam and Girder 383.9' Ramp B Structure-Sub-Structure Only	$330,000 Plans $100	$5,950,000
DISTRICT No. 10, M. E. Hoyt, District Engineer, 325 W. Main St., Babylon, L. I., N. Y.						
Nassau	FAHHE 56-3	Horace Harding Expressway Extension (Cont. 3) (Shelter Rock Road to Willis Ave.) Project No. U-862(10)	1.76 (4.58 Acc.)	9" Cem. Conc. Pavt. (with Carb. Black) 2 @ 36' Wide = 1.55 Mi. 9" Cem. Conc. Pavt. Var. Wide = 0.77 Mi. Asp. Conc. Pavt. = 3.82 Mi. Misc. Work = 0.20 Mi. 2 Hy. Sepa. R.C. Rigid Frames 102.2' and 83.5' 1 Hy. Sep. Comp. Steel Girder 80'	$180,000 Plans $50	$3,377,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Prequalification Date: October 11, 1956

BOARD OF EDUCATION—BUREAU OF CONSTRUCTION. Notice Re: Prequalification Forms for Contractors. NOTICE IS HEREBY GIVEN THAT The Director of the Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York, will receive applications for prequalification of bidders, from Contractors who may wish to submit bids for the proposed hereinafter specified contracts, as follows:

For general construction, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures, elevator and escalators for:

BOROUGH OF BROOKLYN
Jr. H.S. 50, new Addition to and Modernization of existing building, South 3rd St. & Driggs Avenue.

BOROUGH OF MANHATTAN
New Jr. H.S. 13, Fifth Ave., 107th and 106th Sts.
New P.S. 144, 126th St. and Lenox Avenue.
New P.S. 2, Pike & Henry Streets.
New P.S. 140, Remington and Suffolk Avenues.
New Fashion Institute of Technology, West 27th & 28th Sts., between 7th and 8th Aves. Including Elevators and Escalators.

BOROUGH OF QUEENS
New P.S. 221, Marathon Parkway and 60th Avenue.

Prequalification application forms will have to be secured and must be submitted to the Director, Bureau of Construction Office, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City, New York.
Bids when advertised will be received from prequalified bidders only.
The time for submitting prequalification application forms for the above contracts will expire on Thursday, October 11th, 1956.

WILLIAM H. CORREALE
Director
Dated: September 27, 1956.

Bids: October 11, 1956

This Is A Re-advertisement With A Change In Specifications

DELAWARE RIVER PORT AUTHORITY
of the
COMMONWEALTH OF PENNSYLVANIA
and the
STATE OF NEW JERSEY
Administration Building
Camden, New Jersey

WALT WHITMAN BRIDGE CONTRACT NO. P-13

Sealed bids will be received for "Installation of New Stacks on the Power Plant of Publicker Industries, Inc., Delaware and Packer Avenues, Philadelphia, Pa.", known as Contract No. P-13, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey, until 2:30 P. M., Eastern Daylight Time, Thursday, October 11, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon the deposit of $10.00 check, which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $20,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO,
Executive Director

9/19/56
McS

Bids: October 18, 1956

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Barge Canal Improvement Law and Highway Law, sealed proposals will be received, until 10:30 A.M., DST on October 18, 1956 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for

Contract U.S. 94 for
New Gates and Lowering
the Lower Sill at Lock 11
Erie Canal at Amsterdam
Montgomery County, New York

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract U.S. 94 may be examined and obtained at the office of Mr. Lacey Ketchum, District Engineer, 109 N. Genesee St., Utica 1, New York.

The deposit for Plans and Proposal Forms for U.S. 94 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.
The Engineer's Estimate of Cost for Contract U.S. 94 is confidential and will be made known at the time of receiving bids. Proposals for U.S. 94 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of five percentum, (5%) of the bid. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Barge Canal Improvement Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: October 23, 1956

Contract NYA-140.038

ADVERTISEMENT

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
UTILITIES TO BUILDING NO. 189

Sealed proposals for the furnishing and installation of utilities to the site of Building No. 189 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, October 23, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, October 4, 1956

Bids: Oct. 17, 26, and Nov. 7, 1956

Construction of Sewers (Approximately 20 Miles)

Arlington Sewer District, Town of Poughkeepsie, Dutchess County, New York.

Sealed proposals will be received by the Town of Poughkeepsie, New York, until 8 PM on the dates designated, at which time they will be opened and publicly read aloud, for:

Contract 2—	Outfall Sewer	(October 17)
3—	Sewers	(October 26)
4—	Sewers	(November 7)

Plans, Contract Documents, and Specifications may be obtained from Town Clerk, Anne K. Rogers, Town Hall, Dutchess Turnpike, Poughkeepsie, New York, upon deposit of $25 for each set of plans and specifications for each contract, which sum will be returned to all bidders.

Bids to be accompanied by Bid Bond or Certified Check in the amount of not less than 5% of base bid.

ARLINGTON SEWER DISTRICT
Morrell Vrooman Engineers
Gloversville, New York

Bids: November 1, 1956

New York State Thruway Authority

NOTICE TO BIDDERS

The New York State Thruway Authority invites proposals and quotations for the furnishing and installation of AUTOMATIC TOLL COLLECTION EQUIPMENT for barrier toll stations on the New York State Thruway. Full information on the Automatic Toll Collection System is available and may be obtained from the office of the Director of Purchasing, New York State Thruway Authority, Delaware Avenue Plaza, Elsmere, New York (Mailing Address: P. O. Box 189, Albany, New York).

Each proposal should be enclosed in a sealed envelope and the words "Automatic Toll Collection Equipment" should be shown, for identification, on the face of the envelope, and sealed envelope should be directed to the Authority at the above mailing address. Sealed proposals will be received until 11:00 A. M., E. S. T. on November 1, 1956 when they will be publicly opened and read. The Authority reserves the right to reject any or all proposals.

HOLDEN A. EVANS, JR.
General Manager

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 14C-4767) will be received at Ephrata, Washington, until October 31, 1956, for furnishing labor and materials for White Bluffs Pumping Plant No. 1, Laterals and Discharge Lines, Block 26, Columbia Basin Project, Washington Location near Othello, Washington. Principal items are 83,900 cu. yds. excavation; 220 cu. yds. concrete; furnishing and laying 1,620 lin. ft. 21-inch and 66-inch concrete pipe; furnishing and erecting 56,000 lbs. steel for pumping plant superstructure; and other work. Completion time 660 days. For particulars, address Bureau of Reclamation, P. O. Box 368, Ephrata, Washington; P. O. Box 937, Boise, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 14C-4770) will be received at Weaverville, California, until October 23, 1956, for furnishing labor and materials for Water Supply System for Trinity Government Community Facilities, Central Valley Project, California. Location near Lewiston, California. Principal items are 2,900 cu. yds. excavation; 4,000 lin. ft. excavation and backfill of pipe trenches; furnishing and erecting chlorination building; furnishing and installing 2 motor-driven pumping units; and other work. Completion time 120 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

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EX 2-4167 — JOHN HAMM

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Liberal vacation and sick leave—retirement plan—advancement opportunities—new air conditioned building

ATTRACTIVE PAY
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Send resume to Arizona Highway Dept. - 1739 W. Jackson, Phoenix, Arizona

SALARIED POSITIONS $5,000 — $35,000

We offer the original personal employment service (established 46 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

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539 Brisbane Bldg. — Buffalo 3, N. Y.

ENGINEERS
Are you worth up to
$10,000 A YEAR?

Important permanent positions, paying from $6,500 to $10,000 a year with unusual future opportunity, have been created by the expansion program of our large, long-established engineering and construction firm. We need qualified engineers, designers and draftsmen experienced in structural, concrete, mechanical and piping design. Engineering offices are in several major American cities and Canada. Excellent working conditions. Generous company benefits. Our employees know of this ad.

Investigate this opportunity. Write today, giving age, education and experience. Your inquiry will be kept strictly confidential and will be answered promptly.

P-3067, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

REPLIES (Box No.): Address to office nearest you
c/o This publication Classified Adv. Div.
New York: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

General Supt. Engr. for Sewers and water lines must be well experienced in supervisory installation and estimating, coordinating inside and outside. Old established Company. Resume held in confidence. Columbia Constr. Co. Inc., 2108 Columbia Ave., Indianapolis 2, Ind., WAlnut 3-1567, Mr. Farrer.

General Superintendent, qualified engineer for Kansas contractor, must have proven experience on industrial buildings & gov't. projects. Salary open. P-2754, Engineering News-Record.

Heavy Equipment Engineer with at least 2 to 3 years of Mechanical Engineering Schooling for work in the South. Full information and references in first letter requested. Reply P-2917, Engineering News-Record.

Designers—Steel, Concrete, Electrical Piping. Air-Cond., Power Plants & Industrial Bldgs. Marbarry Corp., 120 Greenwich St., N.Y.C. Rector 2-3749.

Wanted: Registered Professional Engineer specializing in Soil Machanics, capable of taking complete charge of Soil Mechanics office performing soil exploration, laboratory testing, and writing engineering reports with respect to foundation requirements. Experience necessary. Some experience in structural design of foundations preferable but not essential. Good salary commensurate with qualifications. State qualifications in full, experience resume, references and salary requirements. P-2945, Engineering News-Record.

Civil Engineers, Designers, Draftsmen experienced in the design of sewers, pumping stations, sewage treatment plants, water supply systems, structural and hydraulic design, hydraulic computations, specs. O'Brien & Gere, 400 E. Genesee St., Syracuse, N. Y.

Civil Engineers — immediate vacancies for beginners and experienced Civil Engineers. Work related to flood control projects and hydrologic studies. Openings in Chicago and Springfield Illinois. Salary range $400-$600. Reply stating experience, location preferred and salary desired. Box P-2948 Engineering News-Record.

Land Surveyor:—for old established Chicago firm. Permanent position. Salary $6000-$8000 per year. Give experience in first letter. P-2916, Engineering News-Record.

POSITIONS VACANT

Wanted: Senior Structural Designing Engineer. Permanent position with industrial company in upper New York State. Excellent salary and opportunity based on ability. Fine living conditions for family. P-3006, Engineering News-Record.

Architectural draftsman for office with school and church jobs to plan. Experience preferred in preliminary layout, presentation drawings and construction drawings. Permanent position for qualified man. Write P. O. Box 36 Lancaster, Ohio, giving qualifications, experience and salary, or call Lancaster 2243-W for appointment.

Soils Engineer—Civil or mechanical engineering graduate preferred. Training in soil mechanics desirable. Excellent opportunity with internationally known construction firm. Submit complete resume including salary desired. P-3040, Engineering News-Record.

Highways Engineers, Designers, Draftsmen for office work in the vicinity of Louisville, Ky., on highways, expressways and similar civil works. Permanent positions for qualified experienced engineers or recent graduates—with a growing firm of established consulting engineers — Opportunity for advancement based on merit—Liberal transportation and moving allowances. Suburban living available close to office. Liberal Employee Benefits—Immediate openings—Beginning Salary Commensurate with Qualifications. Please write fully to Box P-3056, Engineering News-Record.

Architectural Engineer — Experienced steel and concrete designer for attractive position in office of Central Pennsylvania Architect. Work includes churches, schools and commercial buildings. Permanent position and attractive salary. P-2756, Engineering News-Record.

Estimators and Sales Representatives in Philadelphia, Chicago, and San Francisco areas preferably. Relocation unnecessary. Good pay, plus profit dividends. Address resume and references to Construction Survey Co., 101 Park Avenue, New York 17, N. Y.

Supervisor—Prestressed beam department. Metropolitan area concrete products manufacturer. Should have engineering background with experience in concrete building products manufacturing. Permanent. Company paid welfare plan. Write for appointment. P-3072, Engineering News-Record, 330 W. 42nd Street, New York 36, New York.

Civil Engineer—$5178 to $6326 yearly. In Hydrology Division of Water Resources Commission. Completes field studies concerning water use and water conditions on a statewide, river basin, regional or local basis, such studies to include the gathering and tabulation of hydrologic data from all sources. Analysis of such data for preparation of flood and drought frequencies, back water curves, flow-duration curves, mass diagrams, and other related hydrologic studies. Makes field investigations of problems dealing with beach erosion, ground water pollution floods, drainage and sedimentation. Write Michigan Civil Service, Lansing 13, Michigan.

Soil Engineer. By consulting engineering firm specializing in applied soil mechanics. Capable of supervising field and laboratory investigations and writing engineering reports with minimum supervision. Must be experienced and/or have good academic background in the specialty. Good opportunity for advancement. Please state qualifications in full and salary requirements. P-3083, Engineering News-Record.

Registered Engineer to take complete charge of proposed Chicago office for established firm of Consulting Engineers. P-3079, Engineering News-Record.

City Engineer for city of 26,000 population. Graduate engineer required—salary $6000. State experience, age, availability, and references. Reply City Manager, Gloucester, Massachusetts.

Traffic Engineer. Salary $653-$785. Three weeks vacation, sick leave, vacation. Requires college graduation and two years traffic experience. Apply Contra Costa County Civil Service, Box 710, Martinez, California.

Engineers for municipal and industrial water supply, sewerage and treatment projects. Opportunities for permanent connection with long established firm of consulting engineers in mid-west. Both E.I.T.'s and engineers considered. Full information and references in first letter requested. P-3116, Engineering News-Record.

(Continued on page 157)

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Men experienced in design of earth-fill or concrete dams, spillways, penstocks and hydro electric power stations are desirable. Allied experience acceptable.

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Manager of Employment & Placement
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For an immediate personal interview you may phone:
Paul Keating, Plaza 7-4400, New York City
Joe Braddick, Fairfax 3-2401, Houston, Texas
Bill Milligan, Tucker 1549, Los Angeles, Calif.
Don Palmer, Douglas 2-4022, San Francisco, Calif.

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FOR OFFICE WORK IN ST. LOUIS ON HIGHWAYS EXPRESSWAYS AND ASSOCIATED CIVIL WORKS

- *Permanent employment for qualified men*
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Ink Tracers—Computors
Rochester, Pa.

Air Mail Resume TO R. L. SHAW, *Personnel Director*

MICHAEL BAKER, Jr., Inc.
BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, power-plants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

HARZA ENGINEERING CO.
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Recent graduates and experienced design engineers needed.

Company paid hospitalization, life insurance, retirement and holidays. 40-hour week. Send complete experience and education resume with salary requirements to:

Palmer & Baker Inc.
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SENIORS and JUNIORS

Work in New York City and New Jersey

BROWN & BLAUVELT
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44 Cooper Street, Woodbury, New Jersey

ASSISTANT TO SUPT.
For
CONCRETE PRODUCTS PLANT

Large progressive organization seeks young man with technical or engineering background with proven ability and ambition to fill position offering real opportunity.

This opening provides a steppingstone to executive assignment and unlimited potential. Please reply giving personal, business and educational background.

P-2959, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS, DESIGNERS and DRAFTSMEN

Permanent positions in an Engineering Department involved in all phases of engineering planning and layout, building and machine alterations, new construction, engineering evaluation and new equipment and processes, for our four paper mills in west central New Jersey.

STRUCTURAL—Reinforced concrete, structural steel, industrial plant experience.

MECHANICAL—Steam and power, service and process piping and equipment, heating and ventilating.

MACHINE DESIGN—Paper mill, finishing and converting equipment.

DRAFTSMEN—Senior and Junior, one year minimum general industrial experience.

Please write stating education, experience, salary expected and availability.

RIEGEL PAPER CORPORATION
Personnel Department
MILFORD, N. J.

HEAD STRUCTURAL DESIGNER

To supervise and administer Structural Designing and Drafting Department in home office of long established Boston consulting engineering firm.

Send resume of experience, references and record of past earnings to

P-2992, Engineering News-Record
Class. Adv. Div.,
P. O. Box 12, New York 36, N. Y.

TOP-FLIGHT ENGINEERS DESIGNERS DRAFTSMEN

McKEE has openings for top men to fill important, permanent positions, with excellent prospects for promotion to supervisory, staff and executive posts in our expanding organization.

Our Metals, Refinery and Industrial Divisions offer you wide choice of opportunity to make fullest use of your talents in the design of refineries, blast furnaces, steel, sintering, chemical and industrial plants and their auxiliaries.

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Telephone TOwer 1-2300, Cleveland, Ohio
or write to Edward A. Kolner,
Arthur G. McKee & Company,
2300 Chester Ave., Cleveland 1, Ohio

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Opportunity for practicing and advancing in the Engineering Profession in an atmosphere of friendliness and competence.

Our goal is to provide timely service to our clients, proper compensation and recognition to our staff, and dignity to our profession.

Engineers and designers are needed to increase our staff in the following departments

Structural	3 men	5 to 7 years experience
Sanitary	1 man	7 to 10 years experience
Highway	8 men	4 to 10 years experience
Electrical	1 man	7 to 10 years experience
Process	1 man	15 to 20 years experience
	2 men	5 to 10 years experience

Submit experience resumes and references.
Interviews will be arranged

PATCHEN AND ZIMMERMAN, ENGINEERS
AUGUSTA, GA.

STRUCTURAL DRAFTSMEN

FOR HIGHWAY BRIDGE WORK
In New York City and New Jersey

BROWN & BLAUVELT
468 Fourth Avenue, New York City
44 Cooper Street, Woodbury, New Jersey

RESIDENT ENGINEER AND DEPUTY RESIDENT ENGINEER

To supervise construction of $40,000,000 rockfill dam in the Middle East. Four-year completion schedule. Please send detailed experience and personal record. Specify salary expected and earliest date available.

HARZA ENGINEERING COMPANY
400 W. Madison St. Chicago 6, Ill.

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to
Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

SANITARY ENGINEER

Experienced in water supply and sewage disposal. Preferably with Masters Degree. Growing organization, good salary and opportunity. Middle Atlantic State. Please state full qualifications, experience, references.

P-3038, Engineering News-Record
Classified Adv. Div., P. O. Box 12,
New York 36, N. Y.

ENGINEER

(CIVIL—OVERSEAS)
HIGHWAY MATERIALS and TESTING ENGINEER

Position: In charge of modern highway testing laboratory and materials survey in Near East.

Requirements: 15-20 years experience. Ability to organize and direct a country wide materials survey and train personnel in testing operations.

Top salary—good living conditions—liberal benefits including paid transportation for wife.

P-2966, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CHIEF ESTIMATOR

Well known New Jersey General Contractor needs qualified man to head Estimating Dep't., Degree Preferred. Engineering background necessary. Must have at least 10 years of successful bidding experience in all phases of heavy construction, such as Highways, Structures, Dams, Drainage, etc.

Salary $10,000.00 up. Unlimited opportunity for properly qualified man. All replies confidential. Our employees know of this ad.

P-2999, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIVIL ENGINEER

With municipal experience on sewers and pavements to supervise field construction. Permanent position under Civil Service with retirement plan.

APPLY PERSONNEL DIRECTOR
City Hall, Royal Oak, Michigan

WANTED

Experienced resident engineer for steam electric station construction. Capable of coordinating project and willing to work in our Chicago office on design specifications, etc. between field assignments. Submit complete resume to:

PIONEER SERVICE & ENGINEERING CO.
231 S. La Salle St. Chicago 4, Ill.

POSITIONS VACANT
(Continued from page 154)

Field Geologist: Carry on field investigations and geological studies for portland cement mfr. for purpose of developing new sources of raw materials and extending knowledge of present deposits. Will hdqr. in Chicago, Ill., but must be free to travel. Will consider recent graduates as well as experienced applicants. Must have degree. Give full details on exp., training, personal data, and salary desired in first letter. Reply to P-2876, Engineering News-Record.

Civil Engineers: Water Distribution—Sewer Design—construction engineering—for a public utility organization in a rapidly expanding locality—ideal working and living conditions—attractive benefits—send resume stating to: Personnel Director, The Metropolitan District, 115 Broad St., Hartford, Connecticut.

Structural & misc. steel detailer—must be experienced, excellent climate, good housing conditions, top wages. Give full particulars. Tucson Iron Works, Box 1949, Tucson, Arizona.

Construction Superintendent wanted for $2,-000,000 school. Location, Grosse Pointe, Michigan. Good organizer with proven record. Work starts at once. Krieghoff Company, 6661 French Road, Detroit 13, Michigan. Walnut 1-3400.

City Engineer for City of Little Falls, N. Y. Has responsible charge of the activities of the Public Works Dept. does related work as required. This is an important administrative position, involving responsibility for planning & directing the activities of a Public Works Dept. in accordance with the general policies of the Board of Public Works. General supervision is exercised over all activities of the Department. Acceptable experience and training: Five years of experience in street and highway construction or general engineering construction of which three years shall have been in a responsible supervisory capacity, and graduation with a degree in civil engineering from an engineering school registered by the University of the State of New York; or any equivalent combination of experience and training sufficient to indicate ability to do the work. Special requirements for acceptance of applications—a professional engineer's license issued by the State of New York. Last date for receiving applications October 12, 1956 at 3:30 P.M. Applications may be obtained and filed at the City Clerk's office, City Hall, Little Falls, N. Y.

Town Engineer to serve as Highway and Planning Engineer for Town of 8500. Responsible for engineering in connection with construction and maintenance of roads, streets, bridges, ad storm drains. Apply to Town Manager, Houlton, Maine.

Superintendent or Assistant Superintendent, experienced and capable of running jobs up to 150,000. Prefer carpenter background. Salary commensurate with ability. Permanent position with Central Illinois Company for the right man. Apply to P-3100, Engineering News-Record.

Draftsman—Experienced structural steel detailer. Permanent position in Jersey coast resort town. Apply Park Steel & Iron Company, Evergreen & R. R. Aves., Bradley Beach, N. J.

Construction—The man we are looking for is now employed as an Assistant Superintendent and field engineer. Prefer graduate engineer with approximately five years of field experience with general contractor in commercial and industrial building construction. (Office experience helpful). This man should be ready to run jobs under $1,000,000, as construction superintendent and able in near future to assume responsibility for, and take complete charge of all our field operations. This is an exceptional opportunity with an old well established but growing construction company, in Rhode Island. P-3101, Engineering News-Record.

POSITIONS WANTED

Construction or project manager, 48, engineering background. 30 years experience all phases heavy construction roads, bridges, hydroelectric projects, steel and concrete structures. Proven administrator and producer. Desires short term assignment. Excellent pinch hitting during sick leave, vacations or where job needs a boost. Would consider permanent connection. Available October 15. Domestic or foreign. PW-3002, Engineering News-Record.

POSITIONS WANTED

C.E. and M.E. in power plant engineering including 28 years of diversified experience in heavy and light construction, wishes new connection as a construction manager, general superintendent, project manager, or engineer, foreign work preferred with mild climate. Experience in airfields, water distribution, disposal plants, roads, railroads etc. Now employed in Spain. Available 60 days. PW-3060, Engineering News-Record.

Construction or Maintenance Superintendent (52) Bulk Oil or Gasoline Storage; familiar with the below ground hydraulic; pump and tank, or gravity systems. Army or Navy specifications. Interested in domestic or foreign projects. PW-3019, Engineering News-Record.

Const. Supt. BSCE, age 33. Background bldgs., dams, schools, PW-3042, Engineering News-Record.

Construction Engineer Superintendent. Age 43 BSCE. 20 years office and field experience: roads, airfields, waterworks, sewage, bridge and industrial construction: soils testing. Available for owner or contractor Eastern States. PW-3008, Engineering News-Record.

Project Mgr.—General Superintendent—Engineering background—age 44 yrs. with 20 years experience in heavy construction. Industrial with some municipal work. Seeks permanent connection. Prefer South or Southwestern Area but will consider others. Please describe position and state min. salary and benefits. PW-3024, Engineering News-Record.

Accountant experience office manager in heavy construction, dams and air field buildings and under ground systems. College major accounting special course industrial management, age 45, married, wife and I go anywhere. PW-2897, Engineering News-Record.

Mining Engineer — Production — Exploration — Sales Promotion. Background includes management of surface and dredging operations; geologic exploration and evaluation of non-ferrous deposits including several years in South America; sales, sales promotion and product development of earth moving and drilling equipment, and explosives. Experienced in United States Government contracts. PW-2942, Engineering News-Record.

Mechanical Engineer, eighteen (18) years experience in all phases of mechanical work, usually associated with large consulting engineering offices in New York City, including petroleum piers, oil pipelines, tank farms, airports, tunnels, roads, buildings, etc. Position desired should be of responsibility level, involving reports, design, specifications, bid analysis, supervision, etc., New York or vicinity, Box PW-2944, Engineering News-Record.

Construction Executive sound experience all phases, bid to completion, buildings and heavy construction, available as project manager, chief estimator or similar position where scope and volume require top man. Now employed. Minimum $15,000. PW-2596, Engineering News-Record.

Civil Eng., MS, 33, Regist. Calif., wishes to associate with consulting engineer or purchase practice. West Coast location. PW-3071, Engineering News-Record.

Seasoned Structural Engineer, registered in several states, used to handle large structural projects of any kind, particularly industrial buildings and bridges, is available for new connections, domestic, Europe or S.A. PW-3073, Engineering News-Record.

Construction Engineer, B. C. E. 1954 2 years experience, single, desires foreign employment in construction field. PW-3074, Engineering News-Record.

Sanitary Engineer, BSCE, 27, veteran, presently working for M.S. in sanitary engineering, 2 yrs. experience in design and supervision at construction on sewage and water treatment plants, desires position in consulting or industrial firm, industrial or municipal waste field, middle west, western US or Canada. Available February. PW-3084, Engineering News-Record.

Civil Engineer PE NY water, sewer, grading, drainage, pavements, highways, industrials, institutions, airports, designs, specs, reports —work on job basis only. PW-3077, Engineering News-Record.

Executive, 19 years administrative & supervisory experience in heavy construction, incl. Govt and State projects. Bid to completion. Manage branch or project. $15,000, min. PW-3089, Engineering News-Record.

Exec., Sec., Steno, (female) technical engineering, const., architectural. PW-2748, Engineering News-Record.

Superintendent, heavy & bridge construction, 19 years experience bid to completion, $200, PW-3102, Engineering News-Record.

POSITIONS WANTED

Controller—seeks similar position. Over 12 yrs. engineering & construction contracting accounting experience plus 4 years public accounting. Top supervisor all financial & accounting detail. Or, will work with group of medium & smaller companies on part time arrangement to handle all bookkeeping, cost reports, income tax returns, etc. Will also install system and supervise your personnel. Work area to include N.Y.C. Westchester & Putnam counties and Fairfield county in Conn. PW-3111, Engineering News-Record.

General Foreman or assistant superintendent desires to relocate in west or Pacific N. West. Would like position with growing contractor. 17 years experience in residential and commercial building. 37 years of age. PW-3106, Engineering New-Record.

Florida interested job there—executive, field or sales capacity 15 yrs. experience heavy construction, waterfront work small initial salary acceptable. PW-2879, Engineering News-Record.

Construction Engineer Executive, 20 years experience in all phases of contractual earth moving, both dry land and hydraulic suction dredging, excavation and embankment etc., from initial investigation thru final completion. Co-ordination of labor relations, management diplomacy, both field and administrative, negotiation of special problems that require ingenuity. Either domestic or foreign PW-3108, Engineering News-Record.

Civil Engineer, PE, 44. Soils engineer (Chief) two states, highway & heavy structures construction, materials, presently diversified research administrator, skilled technical writer, speaker. PW-3110, Engineering News-Record.

SEARCHLIGHT SECTION

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

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Mail Order Opportunity—Exciting home business or office side line. Mail order executive will show you how to net large profits with no investment in merchandise or advertising required. Experience not necessary. Proven practical, fully explained in free confidential letter. Write: Impact! Inc. 2108 Payne Avenue, Dept. 29-10, Cleveland 14, Ohio.

Contract Disputes? Government construction contractors who have contract questions under dispute are offered assistance in the settlement or the appeal of said disputes. SS-2433, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

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Measures Traction, Tension, or Weight

A PRECISION INSTRUMENT WHERE QUICK TESTS FOR SAFETY ARE ESSENTIAL.

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5½ LBS

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1—Transport Trailer—50 Ton Capacity—New May 1956

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8" B P	36#	19/35'
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Two Sides to the Coin

LOOKED AT FROM THE UNITED STATES, booming Canada has seemed to a number of American construction firms to offer useful opportunities for employment of their capital and talent. In the view of the Canadian construction man, however, Canada's expansion can quite readily be carried on without any outside help.

These opposing attitudes are, of course, historically inevitable—one example, when the current positions were reversed, occurred when British capital and construction firms aided an expanding U. S. in the last century—but they need not tarnish in any way our good neighbor relationship. There is probably something to be said on both sides of the question, and even Canadians are not unanimous in their attitude.

Several weeks ago, for example, the Alberta Highway Minister was quoted in our Construction Week column as saying that lack of competition was causing Canadian construction costs to get out line, and that the cause was too few Canadian construction firms with the essential equipment and staff. He urged the Canadian construction industry to expand or be prepared to face competition from firms in other countries.

His viewpoint was immediately challenged by an editorial in the *Daily Commercial News and Building Record* (Toronto) which said that, if governmental departments were not getting as many bids as they would like, it was more a result of their own business methods than of Canadian contractors being too busy to bid. These business methods were cited as encompassing arbitrary decisions, bureaucratic attitudes, and long delays in final payments, among others.

Similar dissatisfaction with public works construction has, of course, been voiced in this country, although it must be said in fairness to American contractors that they are seldom deterred from bidding even though conditions are not to their liking. There would seem to be a distinct possibility that in Canada competition is so keen on the normal type of "good" jobs that profit margins are cut so thin as to discourage gambling on marginal work, such as public projects may be.

Support for this view is found in comment we received on this situation from a well-known Canadian contractor who says that the margin of profit is "far smaller than the average margin experienced in your country." He points out that Canadian contractor failures are on the increase as a result.

As in so many cases of this kind it may be that everyone is right—the highway minister in his belief that the Canadian construction industry should expand out in his part of the country, the *Daily Commercial News* in its opinion of the unattractiveness of public work, and the Canadian contractors in their certainty that competition is already too keen to be healthy. Even U. S. contractors may be right in sensing opportunities in Canada which, if followed up on a selective basis, would be a service to that booming nation.

There are always two sides to a coin, but the important requirement is that, together, they add up to something of value. U. S.-Canadian viewpoints on construction opportunities in Canada can, if properly balanced—and made to encompass construction opportunities in the U. S. for Canadians—create something of value, too. Long-time mutual respect makes it practically certain that they will.

New Vistas in Wall Design

SINCE 1951, SPECTACULAR DEVELOPMENTS in new types of exterior curtain walls have followed one another in rapid succession. Thinner, lighter, better appearance, more color—these have been the objectives. And attainment, in major degree, has been accomplished with sandwich-type sections faced with steel, aluminum, concrete, asbestos-cement, porcelain enamel or plastics, accompanied in most cases by large areas of glass.

All this has been at the expense of masonry, which, in sections 12 in. or more thick and weighing some 130 psf, dominated the wall field prior to 1951. In contrast some of these new walls are as little as 1¼ in. thick and weigh only 2 psf. Now, however, masonry has joined the parade, and in a way that promises a real revolution.

At the Modern Masonry Conference last month, conducted by the Building Research Institute, masonry producers disclosed they were ready to enter the thin-wall market with panels they have developed (ENR Sept. 27, p. 24). Facings for these wall assemblies include a prefabricated brick panel only 2½ in. thick, limestone 2 in. thick, marble ¾ in. or less thick and ceramic veneer (architectural terra cotta) 1 in. thick. Most of these materials have seldom been used in the past in thickness of less than 4 in.

These facings substantially enlarge the range of architectural treatment of thin walls. They also, it should be noted, increase the responsibility of building designers and of contractor installers.

Designers have new decisions to make—between thick walls and thin, between masonry and metal, between field and factory-assembled panels and between large units and small. They have to gain experience with the newer wall assemblies, for undoubtedly the behavior of a thin facing as part of a sandwich is significantly different from that of a thick, homogeneous wall. And they have to learn to use the new panels to the best advantage.

Similarly, building contractors are faced with the necessity of learning new techniques of handling and installing these thin units, and perhaps may have to revise construction schedules to take advantage of the specific characteristics of the panels.

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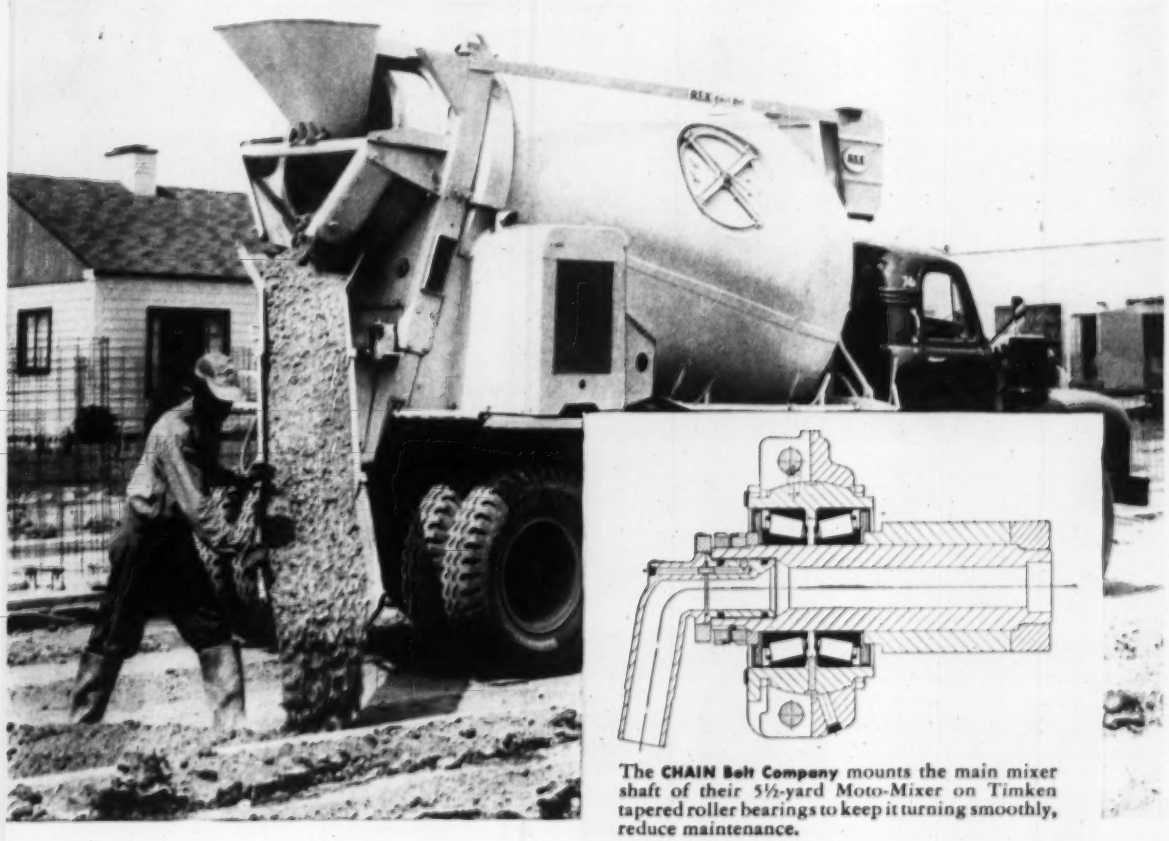

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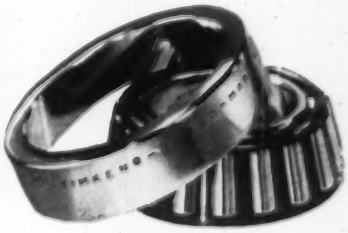
Look for the trade-mark "TIMKEN" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD